QL
642
.B8
V.13

HARVARD UNIVERSITY.

LIBRARY

OF THE

MUSEUM OF COMPARATIVE ZOÖLOGY.

14273

Exchange

August 25, 1914

CATALOGUE

OF THE

LEPIDOPTERA PHALÆNÆ

IN THE

BRITISH MUSEUM.

VOLUME XIII.

LONDON:
PRINTED BY ORDER OF THE TRUSTEES.
1913.

(*All rights reserved.*)

CATALOGUE

OF THE

NOCTUIDÆ

IN THE

COLLECTION

OF THE

BRITISH MUSEUM.

BY

SIR GEORGE F. HAMPSON, BART.

LONDON:
PRINTED BY ORDER OF THE TRUSTEES.
SOLD BY
LONGMANS, GREEN & Co., 39 PATERNOSTER ROW, E.C.;
B. QUARITCH, 11 GRAFTON STREET, NEW BOND STREET, W.
DULAU & Co., LTD., 37 SOHO SQUARE, W.;
AND AT THE
BRITISH MUSEUM (NATURAL HISTORY), CROMWELL ROAD, S.W.
1913.

QL
542
.B6
V.13

PRINTED BY TAYLOR AND FRANCIS,

RED LION COURT, FLEET STREET.

PREFACE.

THE subject of Vol. XIII. of the 'Catalogue of Moths' is the classification of the remainder of the Noctuid subfamily *Catocalinæ* and the subfamilies *Mominæ* and *Phytometrinæ*.

The *Catocalinæ* are represented in the present volume by 44 genera and 379 species, making a total of 107 genera and 1022 species for the subfamily.

The *Mominæ*, with 11 genera and 74 species, are characterized by the eyes being hairy and vein 5 of the hind wing being fully developed and arising from close to the lower angle of cell; that they are rather closely related to the only other Noctuid subfamily with hairy eyes—the *Hadeninæ*—seems probable, but the exact relationship between the Trifid and Quadrifid subfamilies of *Noctuidæ* is still rather obscure.

The *Phytometrinæ*, with 15 genera and 226 species, are similar, but the eyes are smooth and are overhung by bristly cilia; the tibiæ are sometimes spined, but they do not appear to be at all closely related either to the *Catocalinæ*, which subfamily is characterized by having spiny tibiæ in the Quadrifid series, or to the *Agrotinæ* of the Trifid series.

Sir George Hampson has to acknowledge the assistance which he has received, mostly from those whose help has been referred to in earlier volumes of the Catalogue, by the loan of types and specimens, and in other ways.

The coloured drawings which have been made for him from types of species which are not in the Collection of the British Museum, and of which he has been unable to examine specimens, have been reproduced, and are severally acknowledged in the text.

The Plates published in connection with this volume are numbers CCXXII.–CCXXXIX.

CHARLES J. GAHAN,
Keeper of Entomology.

British Museum (Natural History),
September 1st, 1913.

SYSTEMATIC INDEX.

Page

Fam. NOCTUIDÆ (continued) 1

Subfam. CATOCALINÆ (continued) 1

Attatha, *Moore*..... 8
7771. regalis (*Moore*) 8
7772. ino (*Drury*) 9
7773. ethiopica, *Hmpsn.* 10
7774. metaleuca *Hmpsn.* 11
Colbusa, *Wlk.* 11
7775. euclidica, *Wlk.* 11
Acanthodelta, *Hmpsn.*..... 12
7776. distriga, *Hmpsn.* 13
Grammodes, *Guen.* 13
7777. ocellata, *Tepper* 15
7778. oculicola, *Wlk.* 15
7779. pulcherrima, *Lucas* 16
7780. arenosa, *Swinh.* 17
7781. justa, *Wlk.* 17
7782. congenita, *Wlk.* 18
7783. geometrica (*Fabr.*) 18
7784. cooma, *Swinh.* 20
7785. quæsita, *Swinh.* 21
7786. stolida (*Fabr.*) 21
7787. euclidioides, *Guen.* 23
7788. boisdeffrei (*Oberth.*) .. 24
7789. palæstinensis (*Staud.*).. 25
7790. microgonia (*Hmpsn.*) .. 25
Chalciope, *Hübn.* 26
7791. disjuncta, *Moore* 26
7792. hyppasia (*Cram.*)..... 27
7793. pusilla (*Holl.*) 29
7794. cephise (*Cram.*) 30
7795. lucasi (*Guen.*) 31
Cuneisigna, *Hmpsn.*..... 31
7796. obstans (*Wlk.*) 32
7797. cumamita (*Beth.-Baker*) 33

Page

7798. rivulata (*Hmpsn.*) 34
Parachalciope, *Hmpsn.* 35
7799. euclidicola (*Wlk.*) 35
7800. deltifera (*Feld.*) 36
7801. binaria (*Holl.*)..... 36
7802. longiplaga, *Hmpsn.*.... 37
7803. benitensis (*Holl.*)..... 37
7804. trigonometrica, *Hmpsn.* 38
7805. mahura (*Feld.*)..... 39
7806. monoplaneta, *Hmpsn.*.. 39
7807. agonia, *Hmpsn.* 40
Euclidisema, *Hmpsn.* 40
7808. erecta, *Hmpsn.* 41
7809. bisinuata (*Snell.*)..... 41
7810. imminua (*Snell.*)..... 41
7811. mygdon (*Cram.*) 42
7812. alcyona (*Druce*) 43
7813. emathion (*Snell.*)..... 43
7814. delta (*Boisd.*) 44
Leucomelas, *Hmpsn.* 44
7815. juvenilis (*Brem.*)..... 44
Euclidimera, *Hmpsn.* 45
7816. mi (*Clerck*) 46
7817. annexa (*H. Edw.*) 48
7818. futilis (*Staud.*)..... 48
7819. regia (*Staud.*) 49
7820. cærulea (*Grote*) 49
Gonospileia, (*Hübn.*) 50
7821. cuspidea (*Hübn.*)..... 51
7822. dentata (*Staud.*) 52
7823. glyphica (*Linn.*) 52
7824. triquetra (*Schiff.*) 53
7825. munita (*Hübn.*) 54
Megistoclisma, *Hmpsn.* 55
7826. ribbei (*Pag.*) 56
Hypætra, *Guen.* 58
7827. macrostidsa, *Hmpsn.* .. 58
7828. complens, *Wlk.* 59

Hypætra (*con.*). Page
7829. stigmata, *Moore* 60
7830. ethiopica, *Hmpsn.* 61
7831. novaguineana, *Beth.-Baker*..... 62
7832. discolor (*Fabr.*) 63
7833. noctuoides, *Guen.* 64
Cænurgia, *Wlk.* 65
7834. fortalitium (*Tausch.*) .. 66
7835. runica (*Feld.*) 67
7836. convalescens (*Guen.*) .. 67
7837. adusta (*Wlk.*) 68
7838. togataria (*Wlk.*) 69
7839. intercalaris (*Grote*) 70
7840. diagonalis (*Dyar*) 71
7841. erechtea (*Cram.*)..... 71
7842. crassiuscula (*Haw.*) .. 73
7843. distincta (*Neum.*) 74
Remigiodes, *Hmpsn.* 74
7844. remigina (*Mab.*) 75
Mocis, *Hübn.*..... 76
7845. phasianoides (*Guen.*) .. 76
7846. electaria (*Brem.*)..... 77
7847. antillesia, *Hmpsn.* 79
7848. megas (*Guen.*)..... 79
7849. cubana, *Hmpsn.* 80
7850. bahamica, *Hmpsn.* 81
7851. munda (*Wlk.*) 81
7852. marcida (*Guen.*) 82
7853. texana (*Morr.*) 83
7854. disseverans (*Wlk.*) 83
7855. repanda (*Fabr.*) 84
7856. diffluens (*Guen.*) 86
7857. frugalis (*Fabr.*) 87
7858. vitiensis, *Hmpsn.* 89
7859. paraguayica, *Hmpsn.* .. 90
7860. undata (*Fabr.*) 91
7861. trifasciata (*Steph.*) 93
7862. alterna (*Wlk.*) 95
7863. dolosa (*Butl.*) 95
7864. mutuaria (*Wlk.*) 96
7865. inferna (*Leech*)..... 98
7866. persinuosa (*Hmpsn.*) .. 98
7867. inornata (*Holl.*) 99
7868. ramifera, *Hmpsn.* 100
7869. diplocyma, *Hmpsn.*..... 101
7870. undifera, *Hmpsn*..... 101
7871. escondida (*Schaus*) 101
7872. propugnata (*Leech*) 102
7873. annetta (*Butl.*) 102
7874. laxa (*Wlk.*) 103
7875. discios (*Koll.*) 104
Phurys, *Guen.* 105
7876. vinculum, *Guen.* 105
7877. immunis, *Guen.* 106
7878. basilans, *Guen*..... 108

Page
7879. agrapta, *Hmpsn.* 108
7880. infecta (*Wlk.*) 109
7881. bistriga, *Herr.-Schäff.*.. 109
7882. lima, *Guen.* 110
7883. herbarum (*Guen.*) 110
7884. bistrigata (*Hübn.*) 111
7885. ovalis, *Grote*..... 111
7886. campanilis, *Smith* 112
7887. flavistriaria (*Hübn.*) .. 112
7888. carolina, *Smith* 113
Doryodes, *Guen.* 113
7889. insularia, *Hmpsn.* 114
7890. bistrialis (*Geyer*) 114
7891. spadaria, *Guen.* 115
Nymbis, *Guen.*..... 115
7892. arcuata (*Wlk*) 116
7893. helvina (*Guen.*) 117
7894. montana (*Schaus*) 118
7895. fuscilineata (*Kaye*) 119
7896. teligera (*Wlk.*)..... 119
7897. inficita (*Wlk.*)..... 120
7898. iniqua, *Guen.* 121
7899. prolixa (*Feld.*)..... 122
7900. garnoti (*Guen.*) 123
7901. jugis (*Wlk.*)..... 124
7902. lineolaris (*Hübn.*) 125
7903. jaliscana (*Schaus*) 126
7904. copiola (*Guen.*) 126
7905. flexa (*Guen.*) 127
7906. moxa (*Schaus*) 127
7907. candida (*Dogn.*) 128
7908. bigutta (*Schaus*) 128
7909. navilla (*Schaus*) 129
7910. monaxa (*Schaus*)..... 129
7911. dimera (*Dyar*)..... 130
Celiptera, *Guen.* 130
7912. remigioides (*Guen.*) .. 131
7913. levina (*Stoll*) 132
7914. cometephora, *Hmpsn.*.. 133
7915. grisescens (*Schaus*) 134
7916. thericles (*Schaus*) 135
7917. valina (*Schaus*) 135
7918. frustulum, *Guen.*..... 136
7919. codo, *Dyar* 137
Calyptis, *Guen.*..... 138
7920. idonea (*Stoll*) 138
7921. semicuprea (*Wlk.*) 139
7922. iter, *Guen.*..... 140
Plecopterodes, *Hmpsn.* 141
7923. melliflua (*Holl.*) 142
7924. heterochroa (*Hmpsn.*).. 142
7925. griseicilia (*Hmpsn.*) .. 143
7926. synethes, *Hmpsn.* 143
7927. moderata (*Wllgrn.*).... 144
7928. molybdopasta (*Hmpsn.*) 145

Page

7929. pulchra (*Fabr.*) 145
Gonodontodes, *Hmpsn.* 146
7930. chionosticta, *Hmpsn.* .. 146
7931. dispar (*Herr.-Schäff.*).. 147
Focillidia, *Hmpsn.* 148
7932. texana, *Hmpsn.* 148
7933. bipunctata (*Wlk.*) 149
7934. grenadensis, *Hmpsn.* .. 150
Argyrostrotis, *Hübn.* 151
7935. surrufula (*Dyar*)..... 152
7936. bucetum (*Grote*) 152
7937. pacalis (*Wlk.*)..... 153
7938. diffundens (*Wlk.*) 153
7939. herbicola (*Guen.*) 153
7940. sylvarum (*Guen.*) 154
7941. erasa (*Guen.*) 154
7942. contempta (*Guen.*) 155
7943. deleta (*Guen.*) 155
7944. obsoleta (*Grote*) 156
7945. quadrifilaris (*Hübn.*) .. 156
7946. anilis (*Drury*) 156
Cutina, *Wlk.*..... 157
7947. albopunctella, *Wlk.*.... 157
Cymosafia, *Hmpsn.* 158
7948. pallida, *Hmpsn.* 158
7949. laba (*Druce*) 159
Ramphia, *Guen.* 161
7950. albizona (*Latr.*) 161
Safidia, *Hmpsn.* 163
7951. azteca (*Schaus*) 163
Safia, *Guen.* 165
7952. rufipicta (*Schaus*) 166
7953. pascuala (*Schaus*) 166
7954. obsolefacta (*Schaus*) .. 167
7955. simplicior (*Wlk.*) 167
7956. endomelas, *Hmpsn.*.... 168
7957. demera (*Schaus*) 169
7958. subrosea (*Wlk.*) 169
7959. guayaquilata, *Dogn.* .. 171
7960. separabilis (*Wlk.*) 171
7961. phæochroa, *Hmpsn.* .. 172
7962. cœnochroa, *Hmpsn.*.... 173
7963. brunca (*Schaus*) 173
7964. sublimis (*Schaus*) 177
7965. pacifica (*Wlk.*)..... 178
7966. metopis, *Hmpsn.*..... 179
7967. amazonica (*Butl.*) 180
7968. olearos, *Schaus* 181
7969. meretricia (*Schaus*).... 181
7970. leucopis, *Hmpsn.*..... 182
7971. aperta (*Wlk.*) 183
7972. permixta, *Schaus*..... 183
7973. celia (*Cram.*) 184
7974. bruma, *Schaus*..... 185
7975. caminata (*Schaus*) 186
7976. leucoplaga (*Schaus*).... 187

Page

7977. amata (*Druce*)..... 188
7978. amella (*Guen.*) 188
7979. mollis (*Möschl.*) 189
7980. chalybeata, *Hmpsn.* .. 190
7981. minta, *Schaus* 190
7982. obscura (*Schaus*)..... 191
7983. albidiscata (*Schaus*) .. 192
7984. decessa (*Wlk.*)..... 193
7985. acharia (*Cram.*) 193
7986. abscisa, *Schaus*..... 194
7987. barata (*Schaus*) 195
7988. cœruleotincta, *Schaus*.. 196
7989. guapila (*Schaus*) 196
7990. thermochroa, *Hmpsn.*.. 197
7991. mascara (*Schaus*)..... 198
7992. diodonta, *Hmpsn.* 198
7993. bidens (*Kaye*)..... 199
7994. subvaria (*Schaus*) 200
7995. nigrescens (*Schaus*).... 201
7996. irresoluta (*Wlk.*)..... 201
7997. meroleuca, *Hmpsn.*.... 202
7998. picturata, *Schaus*..... 203
7999. divaricata (*Schaus*).... 203
8000. eminens, *Schaus* 204
8001. cades (*Druce*) 205
8002. nyctichroa, *Hmpsn.*.... 206
8003. noctar (*Schaus*) 206
8004. minax (*Guen.*)..... 207
Zale, *Hübn.* 207
8005. discisigna (*Wlk.*)..... 208
8006. setipes (*Guen.*)..... 209
8007. exhausta (*Guen.*)..... 213
8008. pachystrigata, *Hmpsn.*.. 214
8009. galactea, *Hmpsn.*..... 215
8010. viridans (*Guen.*) 215
8011. fictilis (*Guen.*)..... 216
8012. terrosa (*Guen.*)..... 217
8013. grata, *Dogn.*..... 218
8014. sabena (*Schaus*) 219
8015. configurata (*Wlk.*) 219
8016. fuliginosa (*Wlk.*) 220
8017. rufosa, *Hmpsn.* 221
8018. sexplagiata (*Wlk.*) 221
8019. salicis (*Behr*) 222
8020. lunata (*Drury*)..... 223
8021. rhigodora, *Dyar* 225
8022. phæograpta, *Hmpsn.* .. 225
8023. unilineata (*Grote*) 226
8024. declarans (*Wlk.*)..... 227
8025. albidula (*Wlk.*) 227
8026. galbanata (*Morr.*) 228
8027. edusina (*Harv.*) 229
8028. æruginosa (*Guen.*) 229
8029. undularis (*Drury*) 230
8030. corvus (*Schaus*) 231
8031. coracias (*Guen.*) 232

Zale (*con.*). Page
8032. janisca (*Schaus*) 232
8033. insuda (*Smith*)..... 233
8034. minerea (*Guen.*) 234
8035. excellens (*Schaus*) 235
8036. lunifera (*Hübn.*) 236
8037. penna (*Morr.*) 236
8038. australis, *Hmpsn.* 237
8039. benesignata (*Harv.*) .. 238
8040. metata (*Smith*)..... 239
8041. curema (*Smith*) 239
8042. duplicata (*Bethune*) .. 240
8043. bethunei (*Smith*)..... 240
8044. squamularis (*Drury*) .. 241
8045. largera (*Smith*) 242
8046. obliqua (*Guen.*) 242
8047. rubiata (*Smith*) 243
8048. rubi (*H. Edw.*) 244
8049. yavapai (*Smith*) 244
8050. colorado (*Smith*)..... 245
8051. cingulifera (*Wlk.*) 246
8052. calycanthata (*Smith & Abb.*) 246
8053. horrida, *Hübn*..... 247
Sypnoides, *Hmpsn.* 248
8054. equatorialis (*Holl.*) 249
8055. mandarina (*Leech*) 250
8056. pannosa (*Moore*) 250
Tolnaodes, *Hmpsn.* 252
8057. dasynota (*Feld.*) 252
Hypogrammodes, *Hmpsn.* 253
8058. abscondens (*Wlk.*) 254
8059. confusa (*Butl.*)..... 255
8060. æolia (*Druce*) 256
8061. feronia (*Feld.*)..... 256
8062. micropis, *Hmpsn.* 257
8063. subocellata (*Schaus*) .. 258
8064. glauca (*Cram.*) 258
8065. glaucoides (*Schaus*).... 259
Anisoneura, *Guen.* 260
8066. hypocyanea, *Guen.* 260
8067. papuana, *Hmpsn.* 262
8068. zeuzeroides, *Guen.* . .. 262
8069. salebrosa, *Guen.* 263
Anydrophila, *John* 264
8070. simiola (*Püng.*) 265
8071. mirifica (*Ersch.*) 266
8072. imitatrix (*Christ.*) 267
8073. sabouraudi, *D. Lucas* .. 267
Cerocala, *Boisd.* 268
8074. cælata, *Karsch*..... 268
8075. illustrata, *Holl.* 270
8076. insana (*Herr.-Schäff.*).. 270
8077. sana, *Staud.*..... 271
8078. oppia (*Druce*) 272
8079. munda, *Druce* 273
8080. scapulosa (*Hübn.*) 273
8081. vermiculosa, *Herr.-Schäff.* 275
8082. socotrensis (*Hmpsn.*) .. 276
8083. orientalis, *de Joan.*.... 277
8084. masaica, *Hmpsn*..... 278
8085. contraria (*Wlk.*) 278
Leucanitis, *Guen.*..... 279
8086. cabylaria (*Bang-Haas*). 280
8087. sesquistria, *Ev.* 280
8088. picta, *Christ.* 282
8089. christophi, *Alph.*..... 283
8090. roda (*Herr.-Schäff.*) .. 283
Scodionyx, *Staud.* 285
8091. mystica (*Staud.*) 285
Gnamptonyx, *Hmpsn.*..... 286
8092. vilis (*Wlk.*)..... 286
8093. obsoleta, *Hmpsn*..... 287
Hypoglaucitis, *Staud.*..... 287
8094. benenotata (*Warr.*) .. 288
8095. infrequens (*Swinh.*).... 289
Clytie, *Hübn.* 289
8096. devia (*Swinh.*)..... 290
8097. scotorrhiza (*Püng.*).... 290
8098. sancta (*Staud.*) 291
8099. illunaris (*Hübn.*)..... 291
8100. haifæ (*Habich*) 292
8101. distincta (*Bang-Haas*) . 293
8102. syrdaja (*Bang-Haas*) .. 293
8103. arenosa, *Roths*..... 294
8104. syriaca (*Bugnion*) 294
8105. sublunaris (*Staud.*) 295
8106. nabatæa (*Püng.*) 296
8107. delunaris (*Staud.*) 296
8108. terrulenta (*Christ.*).... 297
Pericyma, *Herr.-Schäff.*..... 297
8109. albidens (*Wlk.*) 298
8110. cruegeri (*Butl.*) 299
8111. turbida (*Butl.*)..... 300
8112. umbrina (*Guen.*)..... 301
8113. glaucinans (*Guen.*) 303
8114. atrifusa (*Hmpsn.*) 305
8115. mendax (*Wlk.*) 305
8116. detersa (*Wlk.*)..... 307
8117. metaleuca, *Hmpsn.*.... 308
8118. squalens, *Led.* 308
8119. albidentaria (*Frr.*) 309
8120. scandulata (*Feld.*) 310
8121. polygramma, *Hmpsn.*.. 311
Cortyta, *Wlk.* 312
8122. remigiana, *Hmpsn.* 312
8123. diapera, *Hmpsn.*..... 314
8124. metaxantha (*Hmpsn.*) 314
8125. leucoptera (*Hmpsn.*) .. 315
8126. dispar (*Püng.*)..... 315
8127. fasciolata (*Warr.*) 316
8128. balnearia (*Dist.*) 317

Page
8129. impar, *Hmpsn.* 317
8130. eremochroa (*Hmpsn.*).. 318
8131. vetusta (*Wlk.*)..... 318
8132. rosacea (*Rebel*) 320
8133. polycyma (*Hmpsn.*).... 320
8134. phæocyma, *Hmpsn.*.... 321
8135. canescens, *Wlk.* 321
8136. grisea (*Leech*) 322
8137. profesta (*Christ.*)..... 323
8138. ruficolora (*Hmpsn.*) .. 324
Eubolina, *Harv.* 324
8139. impartialis, *Harv.* 325
Matigramma, *Grote* 326
8140. nitida, *Hmpsn.* 326
8141. pulverilinea, *Grote* 327
8142. rubrosuffusa, *Grote* 327
8143. læna, *Grote* 328
8144. metaleuca, *Hmpsn.* 329
8145. perigeana, *Hmpsn.* 329

Subfam. Mominæ 336

Epicausis, *Butl.* 337
8146. smithi (*Mab.*) 338
Trisuloides, *Butl.* 339
8147. pygaria, *Warr.* 339
8148. papuensis, *Warr.* 340
8149. luteifascia, *Hmpsn.*.... 340
8150. sericea, *Butl.* 342
8151. cœrulea, *Butl.* 343
8152. albiplaga, *Warr.* 344
8153. cornelia (*Staud.*) 345
8154. plumbea (*Butl.*) 345
8155. catocalina (*Moore*) 346
8156. variegata (*Moore*) 347
8157. subflava, *Wileman* 348
8158. albitessellata, *Hmpsn.*.. 348
8159. entoxantha (*Hmpsn.*).. 349
8160. flavala (*Moore*) 350
8161. nitida (*Butl.*) 351
8162. caliginea (*Butl.*) 352
8163. pallidipennis (*Warr.*).. 353
8164. infausta (*Wlk.*) 353
8165. obscura (*Leech*) 354
8166. glauca, *Hmpsn.* 354
8167. c-album (*Leech*) 356
Elæodes, *Hmpsn.* 356
8168. virescens (*Butl.*) 357
8169. acatharta, *Hmpsn.* 357
8170. brevicornis (*Wlk.*) 358
8171. utescens (*Herr.-Schäff.*) 359
Calocasia, *Ochs.* 360
8172. umbrosa (*Wileman*) .. 361
8173. coryli (*Linn.*) 361
8174. flavicornis (*Smith*) 362
8175. electa (*Smith*) 363
8176. propinquilinea (*Grote*) . 363
8177. infanta (*Smith*) 364

Page
8178. mus (*Oberth.*) 364
Diphthera, *Treit.* 365
8179. cœnobita (*Esp.*) 366
8180. acronyctoides (*Wlk.*) .. 367
8181. grisea (*Wileman*)..... 367
8182. furcilla (*Pack.*) 368
8183. portlandia (*Grote*) 369
8184. gigantea (*French*) 369
8185. virginaria (*Grote*) 370
8186. palata (*Grote*) 370
Charadra, *Wlk.* 371
8187. pata (*Druce*) 371
8188. nitens, *Schaus* 372
8189. ingenua, *Smith*..... 373
8190. deridens (*Guen.*) 373
8191. sudena, *Smith* 375
8192. nigracreta, *H. Edw.* .. 375
8193. dispulsa, *Morr.* 376
Moma, *Hübn.* 376
8194. obsolescens, *Warr.* 377
8195. champa, *Moore* 378
8196. ainu (*Wileman*) 379
8197. gypsochrea, *Hmpsn.* .. 379
8198. ludifica (*Linn.*)..... 380
8199. nigrescens, *Warr.* 382
Bathyra, *Wlk.* 382
8200. sagata (*Wlk.*) 383
8201. chavannesi (*Feld.*) 384
Gaujonia, *Dogn.* 385
8202. arbosa, *Dogn.* 386
8203. arbosioides, *Dogn.* 386
8204. vau-nigrum, *Hmpsn.* .. 387
8205. renifera, *Hmpsn.*..... 387
Lichnoptera, *Herr.-Schäff.* 388
8206. decora (*Morr.*)..... 389
8207. felina, *Druce* 390
8208. cavillator (*Wlk.*)..... 391
8209. albidiscata (*Dogn.*).... 392
8210. rufitincta, *Hmpsn.* 393
8211. illudens (*Wlk.*) 394
8212. gulo, *Herr.-Schäff.* 394
8213. primulina, *Dogn.*..... 395
8214. spissa (*H. Edw.*)..... 396
8215. marmorifera (*Wlk.*) .. 396
8216. atrifrons, *Dogn.* 397
8217. mœstoides, *Dogn.* 398
8218. mœsta, *Herr.-Schäff.* .. 399
Elydnodes, *Hmpsn.* 399
8219. variegata (*Leech*)..... 400

Subfam. Phytometrinæ .. 401

Omorphina, *Alph.* 403
8220. aurantiaca, *Alph.*..... 403
Autographa, *Hübn.* 404
8221. parilis (*Hübn.*)..... 404
Caloplusia, *Smith* 405
8222. virgula (*Blanch.*)..... 406

Caloplusia (*con.*). Page
8223. devergens (*Hübn.*) 407
8224. alticola (*Wlk.*)..... 407
8225. hochenwarthi(*Hochenw.*) 408
8226. ignea (*Grote*) 409
Rachiplusia, *Hmpsn.* 410
8227. nu (*Guen.*) 410
8228. pedalis (*Grote*)..... 412
Syngrapha, *Hübn.* 412
8229. ain (*Hochenw.*)..... 414
8230. microgamma (*Hübn.*).. 415
8231. orophila (*Hmpsn.*) 416
8232. diasema (*Boisd.*)..... 416
8233. sacceni (*Grote*)..... 417
8234. snovi (*H. Edw.*) 418
8235. falcifera (*Kirby*) 419
8236. simplicissima (*Ottolengui*) 420
8237. speciosa (*Ottolengui*) .. 420
8238. epigæa (*Grote*) 421
8239. selecta (*Wlk.*)..... 421
8240. celsa (*H. Edw.*) 422
8241. rectangula (*Kirby*) 423
8242. alias (*Ottolengui*)..... 424
8243. u-aureum (*Guen.*) 424
8244. octoscripta (*Grote*).... 425
8245. arctica (*Ottolengui*) .. 426
8246. excelsa (*Ottolengui*).... 427
8247. angulidens (*Smith*) 427
8248. pyrenaica, *Hmpsn.*..... 428
8249. altera (*Ottolengui*) 429
8250. v-alba (*Ottolengui*) 429
8251. surena (*Grote*)..... 430
8252. interrogationis (*Linn.*) . 430
8253. grœnlandica (*Staud.*) .. 432
8254. circumflexa (*Linn.*).... 432
8255. gammoides (*Blanch.*) .. 434
8256. egena (*Guen.*) 435
8257. feisthameli (*Guen.*).... 436
8258. egenella (*Herr.-Schäff.*). 436
8259. illustrata (*Guen.*) 437
Plusiopalpa, *Holl.* 437
8260. camptogamma (*Hmpsn.*) 438
8261. adrasta (*Feld.*)..... 438
Chrysoptera, *Latr.* 439
8262. sica (*Grœser*) 440
8263. micadina (*Butl*) 441
8264. c-aureum (*Knoch*) 442
8265. splendida (*Butl.*)..... 443
8266. aurata (*Staud.*) 444
8267. moneta (*Fabr.*)..... 444
8268. morigera (*H. Edw.*) .. 445
Eosphoropteryx, *Dyar* 446
8269. thyatyroides (*Guen.*) .. 446
Pseudeva, *Hmpsn.* 447
8270. purpurigera (*Wlk.*) .. 448
Page
8271. palligera (*Grote*)..... 449
8272. rubrigera, *Hmpsn.* 449
Plusidia, *Butl.* 450
8273. cheiranthi (*Tausch.*) .. 450
Phytometra, *Haw.* 452
8274. pterylota (*Meyr.*) 452
8275. psectrocera, *Hmpsn.* .. 453
8276. lavendula (*Hmpsn.*) .. 454
8277. gerda (*Füng.*) 455
8278. chalcopasta (*Hmpsn.*).. 456
8279. livida (*Holl.*) 457
8280. phocea (*Hmpsn.*) 458
8281. æneofusa (*Hmpsn.*) .. 459
8282. fracta (*Wlk.*) 459
8283. placida (*Moore*) 460
8284. gammaloba (*Hmpsn.*).. 463
8285. cupreomicans (*Hmpsn.*) 464
8286. chalcedona (*Hmpsn.*).. 464
8287. circumscripta (*Frr.*) .. 465
8288. verruca (*Fabr.*) 465
8289. hemichalcea, *Hmpsn.*.. 466
8290. dorfmeistœri (*Feld.*) .. 467
8291. brassicæ (*Riley*) 467
8292. ni (*Hübn.*) 468
8293. subsidens (*Wlk.*)..... 470
8294. angulum (*Guen.*)..... 471
8295. limbirena (*Guen.*) 472
8296. tarassota, *Hmpsn.* 473
8297. furcifera (*Wlk.*) 473
8298. eugrapha, *Hmpsn.* 474
8299. ablusa (*Feld.*) 475
8300. lunata (*Fabr.*)..... 475
8301. violescens, *Hmpsn.*.... 476
8302. microstigma (*Hmpsn*) . 477
8303. daubei (*Boisd.*) 477
8304. indicator (*Wlk.*)..... 478
8305. obtusisigna (*Wlk.*) 479
8306. lectula (*Wlk.*)..... 480
8307. distalagma, *Hmpsn.* .. 480
8308. brachychalcea, *Hmpsn.* 481
8309. bipartita (*Snell.*) 482
8310. chalcytes (*Esp.*) 484
8311. basigera (*Wlk.*) 486
8312. impulsa (*Wlk.*) 487
8313. meretricia (*Schaus*).... 487
8314. longicornis (*Druce*) .. 488
8315. caudata (*Schaus*)..... 489
8316. argentifera (*Guen.*) .. 489
8317. calceolaris (*Wlk.*) 490
8318. signata (*Fabr.*) 491
8319. rubida (*Ottolengui*).... 491
8320. accentifera (*Lef.*)..... 492
8321. phocina, *Hmpsn.*..... 493
8322. abrota (*Druce*) 493
8323. oxygramma (*Geyer*) .. 494
8324. cebeæ (*Beth.-Baker*) .. 495

Page

8325. albostriata (*Brem. & Grey*) 496
8326. subchalybæa (*Wlk.*) .. 496
8327. gorilla (*Holl.*) 497
8328. permissa (*Wlk.*) 497
8329. cebeana (*Beth.-Baker*). 499
8330. acuta (*Wlk.*) 499
8331. festucæ (*Linn.*) 507
8332. festata (*Græs.*) 508
8333. putnami (*Grote*) 509
8334. nichollæ, *Hmpsn.* 510
8335. contexta (*Grote*)..... 510
8336. bonaerensis (*Berg*) 511
8337. biloba (*Steph.*)..... 512
8338. rhopalosema, *Hmpsn.*.. 513
8339. confusa (*Steph.*) 514
8340. argyrosigna (*Moore*) .. 515
8341. ornatissima (*Wlk.*) 515
8342. agualaniata (*Dogn.*) .. 516
8343. pyropia (*Butl.*) 517
8344. rutilifrons (*Wlk.*) 517
8345. megaloba (*Hmpsn.*) .. 518
8346. nigriluna (*Wlk.*)..... 518
8347. pannosa (*Moore*)..... 519
8348. admonens (*Wlk.*) 520
8349. geminipuncta (*Hmpsn.*) 520
8350. dalei (*Woll.*) 521
8351. oo (*Cram.*) 522
8352. pseudochalcytes, *Hmpsn.* 523
8353. camptosema, *Hmpsn.*.. 523
8354. precationis (*Guen.*) 524
8355. sestertia (*Feld.*) 525
8356. dives (*Ev.*) 526
8357. v-argenteum (*Esp.*) .. 527
8358. ornata (*Brem.*) 528
8359. clarci (*Hmpsn.*) 528
8360. corusca (*Streck.*) 529
8361. labrosa (*Grote*) 530
8362. bimaculata (*Steph.*) .. 530
8363. macrogamma (*Ev.*).... 531
8364. mandarina (*Frr.*) 532
8365. mappa (*Grote & Rob.*) . 533
8366. pulchrina (*Haw.*) 534
8367. iota (*Linn.*) 535
8368. nigrisigna (*Wlk.*) 536
8369. schalisema, *Hmpsn.* .. 537
8370. gamma (*Linn.*) 538
8371. pseudogamma (*Grote*). 539
8372. californica (*Speyer*).... 540
8373. flagellum (*Wlk.*)..... 541
8374. ou (*Guen.*) 542
8375. purpureofusa (*Hmpsn.*) . 543
8376. dudgeoni, *Hmpsn.* 544
8377. limata (*Schaus*) 544
8378. jessica (*Butl.*) 545
8379. bella (*Christ.*) 545

Page

8380. pasiphæia (*Grote*) 546
8381. sansoni (*W. Dod*) 546
8382. exquisita (*Feld.*) 547
8383. semivitta (*Moore*) 548
8384. purissima (*Butl.*)..... 548
8385. tetragona (*Wlk.*)..... 549
8386. anda (*Druce*) 550
8387. orbifer (*Guen.*) 550
8388. parabractea, *Hmpsn.* .. 551
8389. bractea (*Schiff.*) 551
8390. metallica (*Grote*) 552
8391. excelsa (*Kretschm.*) .. 553
8392. æmula (*Schiff.*) 554
8393. argyrodonta (*Hmpsn.*) . 555
8394. v-minus (*Oberth.*) 555
8395. tancrei (*Staud.*) 556
8396. ochreata (*Wlk.*) 557
8397. transfixa (*Wlk.*) 557
8398. arachnoides (*Dist.*) .. 558
8399. aranea (*Hmpsn.*)..... 559
8400. tetrastigma (*Hmpsn.*).. 559
8401. disticta, *Hmpsn.*..... 560
8402. hampsoni (*Leech*) 560
8403. emichi (*Rghfr.*) 561
8404. dorsiflava (*Stndf.*) 561
8405. maria (*Staud.*) 562
8406. augusta (*Staud.*)..... 562
8407. variabilis (*Piller*)..... 563
8408. modesta (*Hübn.*)..... 564
8409. uralensis (*Ev.*) 565
8410. siderifera (*Ev.*) 565
8411. inconspicua (*Græs.*) .. 566
8412. generosa (*Staud.*) 566
8413. cashmirensis (*Moore*).. 567
8414. herrichi (*Staud.*)..... 567
8415. renardi (*Ev.*) 568
8416. consona (*Fabr.*) 569
8417. albavitta (*Ottolengui*).. 570
8418. ampla (*Wlk.*) 570
8419. deaurata (*Esp.*) 571
8420. æreoides (*Grote*)..... 572
8421. masoni (*Schaus*) 573
8422. peponis (*Fabr.*) 573
8423. hebatata (*Butl.*)..... 574
8424. ærea (*Hübn.*) 575
8425. leonina (*Oberth.*) 575
8426. chryson (*Esp.*)..... 576
8427. balluca (*Geyer*) 577
8428. zosimi (*Hübn.*) 578
8429. chrysitis (*Linn.*)..... 578
8430. florina (*Guen.*) 579
8431. orichalcea (*Fabr.*) 580
Palæoplusia, *Hmpsn.* 581
8432. venusta (*Wlk.*) 582
Abrostola, *Ochs.* 582
8433. formosa (*Grote*) 583

Abrostola (*con.*). Page
8434. ovalis, *Guen.* 584
8435. urentis, *Guen.* 585
8436. tripartita (*Hübn.*) 585
8437. asclepiadis (*Schiff.*) .. 586
8438. triplasia (*Linn.*) 587
8439. anophioides, *Moore*.... 588
8440. triopis, *Hmpsn.* 589
Page
8441. abrostolina (*Butl.*).... 589
8442. canariensis, *Hmpsn.* .. 590
8443. brevipennis (*Wlk.*).... 591
Mouralia, *Wlk*..... 591
8444. tinctoides (*Guen.*) 592
Episema, *Ochs*..... 593
8445. cæruleocephala (*Linn.*). 593

ADDENDA TO VOL. XII.

Vol. XIII.
Page
7342 *a*. Ulothrichopus maccvoodi, *Hmpsn.* Vol. XII. p. 222..... 330
7576 *a*. Anua rufescens, *Hmpsn.*..... „ p. 452..... 331
7604 *a*. Tolna macrosema, *Hmpsn.*..... „ p. 479..... 331
7748 *a*. Parallelia rectivia, *Hmpsn.*..... „ p. 598..... 332

CATALOGUE

OF

LEPIDOPTERA PHALÆNÆ.

Family NOCTUIDÆ.

Subfamily CATOCALINÆ (*continued*).

The Key to the Genera is reprinted from Vol. XII. of the Catalogue, with the references to the pages of the present volume inserted with the figure (2) before them.

Key to the Genera.

A. Hind tibiæ spined.
  a. Fore tibiæ spined.
    a^1. Hind wing with the cell about one-fifth length of wing.
      a^2. Wings with the termen non-crenulate ... AGONISTA, p. 267.
      b^2. Wings with the termen highly crenulate... NYCTIPAO, p. 273.
    b^1. Hind wing with the cell about one-third length of wing.
      a^2. Abdomen with dorsal crests on basal segments ..... CATABAPTA, p. 11.
      b^2. Abdomen without dorsal crests.
        a^3. Abdomen dorsally clothed with woolly hair at base.
          a^4. Palpi with the 3rd joint thickly scaled, somewhat dilated at extremity and very long.
            a^5. Fore wing with the apex produced to a point ..... XYLOPHYLLA, p. 387.
            b^5. Fore wing with the apex not produced ..... MINIOPHYLLODES, p. 401.
          b^4. Palpi with the 3rd joint moderate and dilated by a tuft of scales at extremity.

a^5. Fore wing with the inner margin strongly lobed before middle ... LOBOPHYLLODES, p. 400.
b^5. Fore wing with the inner margin not lobed ..... PHYLLODES, p. 389.
c^4. Palpi with the 3rd joint naked, moderate and not dilated at extremity ..... MINIODES, p. 402.
d^4. Palpi with the 3rd joint minute.
a^5. Abdomen dorsally flattened and entirely clothed with woolly hair. COCYTODES, p. 258.
b^5. Abdomen not dorsally flattened and clothed with woolly hair at base only ..... OPOROPHYLLA, p. 386.
b^3. Abdomen not dorsally clothed with woolly hair at base.
a^4. Palpi with the 3rd joint long.
a^5. Fore tibiæ fringed with long hair on outer side; fore wing with the termen evenly curved.
a^6. Fore wing with the costa highly arched towards apex which is not produced ..... METOPTA, p. 300.
b^6. Fore wing with the costa highly arched towards apex which is produced and acute ..... ENTOMOGRAMMA, p. 313.
c^6. Fore wing with the costa slightly arched towards apex which is produced and acute.
a^7. Hind wing with the termen strongly angled at vein 4 ... HEXAMITOPTERA, p. 312.
b^7. Hind wing with the termen evenly curved ..... ENMONODIA, p. 319.
b^5. Fore tibiæ smoothly scaled.
a^6. Fore wing with the termen nearly straight; veins 7, 8, 9 stalked, 10, 11 from cell, and much attenuated ..... CYLIGRAMMA, p. 302.
b^6. Fore wing with the termen evenly curved; the areole present.
a^7. Palpi with the 2nd joint reaching to above vertex of head, the 3rd dilated at extremity..... CEROCALA, (2) p. 268.
b^7. Palpi with the 2nd joint not reaching above vertex of head, the 3rd not dilated at extremity.
a^8. Thorax clothed with scales and hair mixed ... . CALLIODES, p. 344.
b^8. Thorax clothed with hair only .. .. SPEIREDONIA, p. 346.
b^4. Palpi with the 3rd joint short.
a^5. Thorax clothed with hair and scales mixed ..... COMETASTER, p. 362.
b^5. Thorax clothed with hair only ..... DONUCA, p. 364.
c^1. Hind wing with the cell half the length of wing.
a^2. Frons with transverse ridge not clothed with scales, and corneous plate below it. LOPHOTIDIA, p. 242.
b^2. Frons smooth.
a^3. Hind wing with vein 8 approximated to the cell to middle ..... ACANTHODELTA, (2) p. 12.

b^3. Hind wing with vein 8 anastomosing with the cell near base, then approximated to it to middle ..... Doryodes, (2) p. 113.
c^3. Hind wing with vein 8 anastomosing with the cell near base, then diverging.
a^4. Abdomen with dorsal series of crests. Safidia, (2) p. 163.
b^4. Abdomen with crests on two basal segments ..... Prionoptera, p. 471.
c^4. Abdomen without crests.
a^5. Tibiæ fringed with long hair.
a^6. Fore wing short and broad, the costa highly arched towards apex ..... Niguza, p. 372.
b^6. Fore wing longer and narrower, the apex more produced, the costa not highly arched towards apex ..... Audea, p. 209.
b^5. Tibiæ smoothly scaled.
a^6. Eyes small and elliptical; fore wing short and broad..... Euclidimera, (2) p. 45.
b^6. Eyes large and round; fore wing longer and narrower, the apex more produced ..... Cænurgia, (2) p. 65.
b. Fore tibiæ not spined.
a^1. Hind tibiæ spined above the medial spurs.
a^2. Hind wing with the termen produced to a tail at vein 4 ..... Pterocyclophora, p. 466.
b^2. Hind wing with the termen produced to a slight lobe at vein 4 ..... Ctenusa, p. 377.
c^2. Hind wing with the termen evenly curved.
a^3. Fore tibiæ with long curved claw on outer side at extremity ..... Acanthonyx, p. 382.
b^3. Fore tibiæ without claw at extremity.
a^4. Abdomen with dorsal series of crests ..... Sypnoides, (2) p. 248.
b^4. Abdomen with dorsal crests on basal segments.
a^5. Palpi with the 3rd joint moderate; pro- and mesothorax with crests ..... Mormonia, p. 42.
b^5. Palpi with the 3rd joint long; pro- and mesothorax without crests..... Tolna, p. 475.
c^5. Palpi with the 3rd joint minute; pro- and metathorax with crests; hind tibiæ of male with the medial spurs absent . Acanthodica, p. 249.
c^4. Abdomen with basal crest only.
a^5. Frons with pointed conical prominence ..... Remigiodes, (2) p. 74.
a^6. Pro- and metathorax with small crests; fore wing with scale-teeth at middle of inner margin and tornus ..... Catephiodes, p. 481.
b^6. Thorax without crests; fore-wing without scale-teeth at middle of inner margin and tornus ..... Erchetia, p. 482.
d^4. Abdomen without dorsal crests.
a^5. Abdomen dorsally clothed with woolly hair at base.

a^6. Thorax with dorsal ridge-like crest ..... MINUCIA, p. 423.
b^6. Thorax without ridge-like crest.
a^7. Abdomen dorsally flattened.
a^8. Frons with large tuft of hair above; palpi with the 3rd joint porrect ... HERMINIOCALA, p. 234.
b^8. Frons with slight tuft of hair above; palpi with the 3rd joint upturned DERMALEIPA, p. 406.
b^7. Abdomen not dorsally flattened.
a^8. Fore wing with the apex somewhat produced and falcate .... HELIOPHISMA, p. 461.
b^8. Fore wing with the apex not produced and falcate.
a^9. Frons with tuft of hair above.
a^{10}. Fore wing long and narrow ..... ANUA, p. 425.
b^{10}. Fore wing short and broad ..... GONODONTODES, (2) p. 146.
b^9. Frons without tuft of hair above; fore wing short and broad ..... ACHÆA, p. 496.
b^5. Abdomen dorsally smoothly scaled.
a^6. Abdomen dorsally flattened ... ECCRITA, p. 236.
b^6. Abdomen not dorsally flattened.
a^7. Thorax clothed with hair and scales.
a^8. Fore wing with the apex produced and acute; eyes large, round.
a^9. Hind wing with the cell about one-third length of wing.
a^{10}. Frons with tuft of hair above.
a^{11}. Fore wing with the termen oblique and hardly excurved ... CHALCIOPE, (2) p. 26.
b^{11}. Fore wing with the termen more erect and strongly excurved..... NYMBIS, (2) p. 115.
b^{10}. Frons without tuft of hair ..... PHURYS, (2) p. 105.
b^9. Hind wing with the cell about half the length of wing..... MOCIS, (2) p. 76.
b^8. Fore wing short and broad.
a^9. Eyes small, elliptical ..... LEUCOMELAS, (2) p. 44.
b^9. Eyes large, round.
a^{10}. Fore wing with the termen crenulate ... HYPOGLAUCITIS, (2) p. 287.

b^{10}. Fore wing with the termen not crenulate... PLECOPTERODES, (2) p. 141.
b^{7}. Thorax clothed with hair and hair-like scales; fore wing with the apex produced and acute ..... GRAMMODES, (2) p. 13.
c^{7}. Thorax clothed with hair only; fore wing with the apex not produced and acute ..... CLYTIE, (2) p. 289.
b^{1}. Hind tibiæ spined between the medial and terminal spurs only.
a^{2}. Palpi with the third joint dilated into a rounded knob at extremity.
a^{3}. Abdomen with dorsal series of crests. RAMPHIA, (2) p. 161.
b^{3}. Abdomen with dorsal crests on two basal segments..... AMPHORACERAS, p. 376.
b^{2}. Palpi with the 3rd joint not dilated at extremity.
a^{3}. Abdomen with dorsal series of crests. EUPARTHENOS, p. 9.
b^{3}. Abdomen with dorsal crest at base only.
a^{4}. Thorax with ridge-like dorsal crest CELIPTERA, (2) p. 130.
b^{4}. Metathorax with paired crests ..... ATTATHA, (2) p. 8.
c^{3}. Abdomen with dorsal ridges of hair on basal segments.
a^{4}. Thorax with dorsal ridge-like crest. EUMINUCIA, p. 421
b^{4}. Prothorax with spreading crest; fore tibiæ with claw ..... CHELECALA, p. 240.
c^{4}. Thorax without crests.
a^{5}. Fore wing with the apex produced and acute ..... LAGOPTERA, p. 413.
b^{5}. Fore wing with the apex not produced and acute.
a^{6}. Fore wing broad and triangular ..... CATOCALA, p. 58.
b^{6}. Fore wing longer and narrower.
a^{7}. Palpi with the 2nd joint reaching to vertex of head, the 3rd long; hind wing with the cell about one-third length of wing ..... HYPANUA, p. 459.
b^{7}. Palpi with the 2nd joint reaching to middle of frons, the 3rd moderate; hind wing with the cell about half length of wing. TACHOSA, p. 241.
d^{3}. Abdomen dorsally smoothly scaled.
a^{4}. Metathorax with crest.
a^{5}. Frons with large tuft of hair; palpi with the 3rd joint long... EUBOLINA, (2) p. 324.
b^{5}. Frons without tuft of hair; palpi with the 3rd joint moderate ... ANYDROPHILA, (2) p. 264.
b^{4}. Metathorax with crest.
a^{5}. Palpi with the 3rd joint porrect.
a^{6}. Frons with large flattened tuft of hair above; fore wing long and narrow..... HYPOTACHA, p. 243.
b^{6}. Frons with small tuft of hair; fore wing triangular ..... EUPHIUSA, p. 550.
b^{5}. Palpi with the 3rd joint upturned.

a^6. Fore wing with the apex somewhat produced and acute.
a^7. Palpi with the 3rd joint long and acuminate; fore wing with the termen excised below apex and excurved at middle ..... FOCILLIDIA, (2) p. 148.
b^7. Palpi with the 3rd joint moderate, blunt; fore wing with the termen evenly curved ..... CUNEISIGNA, (2) p. 31.
b^6. Fore wing with the apex rounded.
a^7. Eyes small and elliptical ... GONOSPILEIA, (2) p. 50.
b^7. Eyes large, round ..... ANDREUSIA, p. 206.

B. Hind tibiæ not spined.
a. Abdomen with dorsal series of crests.
a^1. Thorax clothed with hair and scales, the prothorax with spreading crests.
a^2. Patagia broadly dilated with scales at extremity; abdomen with very large basal crest.
a^3. Abdomen with the crests on medial segments large and somewhat bifid. SAFIA, (2) p. 165.
b^3. Abdomen with the crests on medial segments small..... ZALE, (2) p. 207.
b^2. Patagia not dilated with scales at extremity.
a^3. Abdomen with the crests on medial segments large..... PERICYMA, (2) p. 297.
b^3. Abdomen with the crests on medial segments small ..... ALLOTRIA, p. 204.
b^1. Thorax clothed with hair and hair-like scales.
a^2. Metathorax with spreading crest ..... TOLNAODES, (2) p. 252.
b^2. Metathorax without crest ..... CALYPTIS, (2) p. 138.
b. Abdomen with dorsal crest at base only.
a^1. Frons with tuft of hair above; palpi with the 3rd joint long ..... CALLOPHISMA, p. 263.
b^1. Frons without tuft of hair above; palpi with the 3rd joint moderate ..... COLBUSA, (2) p. 11.
c. Abdomen with dorsal ridges of hair on basal segments.
a^1. Fore tibiæ with curved claw at extremity. SCODIONYX, (2) p. 285.
b^1. Fore tibiæ without claw at extremity.
a^2. Fore wing with the apex somewhat produced and acute.
a^3. Fore wing long and narrow, the costa not highly arched towards apex, the termen obliquely curved.
a^4. Prothorax with crest, metathorax without crest ..... ULOTHRICHOPUS, p. 220.
b^4. Prothorax without crest, metathorax with spreading crest ..... HYPOGRAMMODES, [(2) p. 253.
b^3. Fore wing short and broad, the costa highly arched towards apex.
a^4. Fore wing with the apex strongly produced and falcate ..... OPHISMA, p. 539.
b^4. Fore wing with the apex slightly produced and not falcate.
a^5. Fore wing with the termen excurved at vein 5 ..... PLASMATICUS, p. 548.

b^5. Fore wing with the termen not excurved at vein 5 ..... PARALLELIA, p. 551.
b^2. Fore wing with the apex not produced.
a^3. Palpi with the 2nd joint reaching to above vertex of head, the 3rd long.
a^4. Palpi with the 3rd joint dilated at extremity ..... PARAGARISTA, p. 262.
b^4. Palpi with the 3rd joint not dilated at extremity.
a^5. Thorax clothed with scales and hair mixed.
a^6. Hind wing with the cell about one-fourth length of wing ... ANISONEURA, (2) p. 260.
b^6. Hind wing with the cell about one-half length of wing ..... HYPÆTRA, (2) p. 58.
b^5. Thorax clothed with hair only ... EGYBOLIS, p. 264.
b^3. Palpi with the 2nd joint reaching to vertex of head, the 3rd long ..... HÆMABASIS, p. 266.
c^3. Palpi with the 2nd joint reaching to middle of frons, the 3rd moderate.
a^4. Hind wing with the termen excised between veins 6 and 2 ... . METATACHA, p. 238.
b^4. Hind wing with the termen not excised between veins 6 and 2 ... EPHESIA, p. 143.
d. Abdomen dorsally smoothly scaled and without crests.
a^1. Fore tibiæ with claw at extremity.
a^2. Metathorax with spreading crest ..... LEUCANITIS, (2) p. 279.
b^2. Metathorax without crest ..... GNAMPTONYX, (2) p. 286.
b^1. Fore tibiæ without claw at extremity.
a^2. Palpi with the 3rd joint porrect.
a^3. Palpi with the 3rd joint long, slender, and somewhat dilated at extremity. MEGISTOCLISMA, (2) p. 55.
b^3. Palpi with the 3rd joint moderate, thickly scaled, and not dilated at extremity.
a^4. Palpi with the 2nd joint bent forward at extremity and fringed above and below with hair..... CRYPSOTIDIA, p. 246.
b^4. Palpi with the 2nd joint not bent forward at extremity or fringed above by hair .... CORTYTA, (2) p. 312.
b^2. Palpi with the 3rd joint upturned.
a^3. Frons with tuft of hair above.
a^4. Hind wing with the cell about one-third length of wing.
a^5. Palpi with the 3rd joint long and acuminate.
a^6. Palpi with the 2nd joint reaching to above vertex of head . PARACHALCIOPE, (2) p. 35
b^6. Palpi with the 2nd joint not reaching to above vertex of head ..... HOMÆA, p. 384.
b^5. Palpi with the 3rd joint moderate and obtuse ..... EUCLIDISEMA, (2) p. 40.
b^4. Hind wing with the cell about half the length of wing ..... ARGYROSTROTIS, (2) p. 151.
b^3. Frons without tuft of hair above.
a^4. Fore wing with the apex produced and acute ..... CUTINA, (2) p. 157.

b^4. Fore wing with the apex not produced and acute.
a^5. Metathorax with depressed crest.
a^6. Fore wing with the termen angled at veins 6 and 4, then oblique ..... Cymosafia, (2) p. 158.
b^6. Fore wing with the termen evenly curved ..... Matigramma, (2) p. 326.
b^5. Metathorax without crest ..... Corisce, p. 207.

Genus **ATTATHA**.

Type.
Attatha, Moore, P. Z. S. 1878, p. 847 .... *regalis*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and moderately scaled, the 3rd moderate; frons smooth; eyes large, round; antennæ of male somewhat laminate and almost simple; thorax clothed with hair and scales mixed, the metathorax with paired crests; tibiæ smoothly scaled, the fore tibiæ not spined, the hind tibiæ with spines between the mid and terminal spurs only; abdomen with dorsal crest at base only. Fore wing with the apex rounded, the termen obliquely curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about one-third length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only

A. Hind wing scarlet or tinged with scarlet.
a. Hind wing with series of small black spots just before termen and large spot above tornus ..... *regalis*.
b. Hind wing with subterminal wedge-shaped blackish band from apex to vein 2 ..... *ino*.
B. Hind wing yellow ..... *ethiopica*.
C. Hind wing creamy white ..... *metaleuca*.

7771. Attatha regalis.

Hypercompa regalis, Moore, P. Z. S. 1872, p. 575, pl. 33. f. 7; Hmpsn. Moths Ind. ii. p. 528.

Head and thorax white; palpi pale scarlet, the extremity of 2nd joint, the 3rd joint and the frons black; antennæ black; tegulæ except at base, shoulders, a band across patagia and mesothorax and a patch on metathorax black; pectus orange, scarlet in front; legs orange, the fore and mid legs black-brown in front; abdomen orange, the basal crest black, the ventral surface tinged with scarlet. Fore wing creamy white; the costal edge blackish towards base; a black fascia on base of median nervure, rounded at extremity; a black fascia on inner margin from near base to beyond middle, pointed at extremities; a triangular black patch from middle of costa to lower angle of cell with an oblique tail from it to submedian fold above tornus, a slight oblique red-brown line from its outer edge below costa to above vein 2 near termen, then erect and waved to inner margin above which it has a small black spot on it; a wedge-shaped black patch from apical part of costa, its lower part attenuate, bent outwards, and ending below vein 4 towards termen; a fine black line on apical part of termen, then black spots on veins

4, 3, 2, the termen tinged with scarlet towards tornus. Hind wing scarlet; a round subterminal black spot in submedian interspace, a series of minute black spots before termen from apex to below

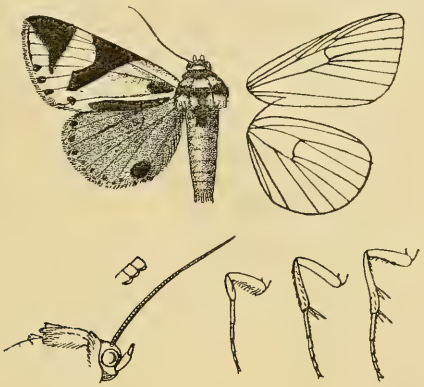


Fig. 1.—*Attatha regalis*, ♂. ½.

vein 2, and black points on termen at veins 4, 3, 2. Underside of both wings pale scarlet; fore wing with the oblique medial mark reduced and not extending to costa, a black patch before middle of termen.

Hab. "N. India"; Bombay, Kanara; Ceylon (*Mackwood*), 1 ♂; Burma, Kalewa (*Watson*), 1 ♂, Up. Tenasserim (*Wood-Mason*), 2 ♂, Dawnat Hills (*de Nicéville*), 1 ♀; Philippines, Luzon, Cebu. *Exp.* 48–58 millim.

Larva. Semper, Reise Phil., Schmett. ii. p. 566, pl. T. ff. 3–5.

Yellow with a black lateral stripe except on 1st and terminal somites, defined by whitish and with some black striæ above it; or green with a pale lateral line, the stigmata crimson. Food-plant, *Streblus*. 7. Forms a brownish white cocoon of silk and hair.

7772. Attatha ino.

Noctua ino, Drury, Ill. Exot. Ins. iii. p. 39, pl. 29. f. 3 (1782); Hmpsn. Moths Ind. ii. p. 529.
Noctua notata, Fabr. Ent. Syst. iii. 2. p. 39 (1794).
Grammodes mundicolor, Wlk. xxxiii. 973 (1865).

Head and thorax creamy white; 3rd joint of palpi, frons and antennæ black-brown; tegulæ except at base, shoulders, a band across patagia and mesothorax and a patch on metathorax black; fore and mid tibiæ in front and the tarsi tinged with brown; abdomen ochreous yellow, the basal crest black, a lateral series of small black spots. Fore wing creamy white; the costal edge blackish towards base; a wedge-shaped subbasal black mark on median nervure; an antemedial black fascia on inner margin; a

quadrate black patch from costa to lower end of cell with a curved fascia from its inner side to submedian fold above tornus with a small black spot beyond it above vein 1; a triangular black patch from terminal part of costa to above vein 2 before termen, a fine black line before its inner edge except above vein 6; a fine black line on apical half of termen followed by small spots on veins 4, 3, 2, the lowest larger and round; the terminal part of vein 2 streaked with crimson and the termen tinged with scarlet towards tornus. Hind wing pale scarlet; a wedge-shaped black-brown band from apical part of costa to submedian fold towards which it becomes maculate; small terminal black spots on veins 4, 3, 2; cilia blackish at apex. Underside of both wings ochreous yellow with the markings obsolescent.

Hab. Punjab (*James*, *Horne*), 3 ♂, 2 ♀, Kangra, 1 ♀; Nepal (*Hardwicke*), 1 ♂; Sikhim; Bengal, Pusa (*Mason*), 1 ♂, 1 ♀; Bombay, Kutch, Anjar, 1 ♂; Madras (*Watson*), 1 ♂. *Exp.* 32–40 millim.

Larva. Indian Museum Notes, v. p. 114, pl. xiii. ff. 6 *a*, *b*.

Yellowish white or dark pink above, yellowish white below; lateral lines pale, more or less distinct; each somite with a few colourless bristles; head dirty white, pinkish, or brown. Food-plant, Pipal. Pupates underground without cocoon.

7773. Attatha ethiopica.

Attatha ethiopica, Hmpsn. P. Z. S. 1910, p. 425, pl. xxxviii. f. 17.

Head orange, the frons with black bands at middle and above; palpi with some black above; antennæ blackish; thorax yellow, the tegulæ at tips, the meso- and metathorax with velvety black bands; pectus in front and fore legs orange; abdomen orange above, yellow below. Fore wing ochreous yellow tinged with rufous towards tornus; a triangular velvety black patch in and below base of cell, its outer edge somewhat excised and its lower extremity rather produced; a black fascia on inner margin from near base to beyond middle, its extremities acute; a triangular velvety black patch from middle of costa, its outer edge produced to a point between veins 4, 3 and its lower extremity produced to a long oblique fascia where it is somewhat dilated and bifurcate; a triangular velvety black patch from costa before apex, its lower extremity obliquely produced to a point near termen below vein 3, rather lobed on outer side, a fine oblique brown line before the patch from vein 7 to below vein 3; a fine black terminal line from apex to vein 4, followed by small spots at veins 4, 3, 2; a few black scales at tornus; cilia black at tips between veins 4 and 2. Hind wing orange-yellow with narrow black band or series of small spots between apex and vein 3 sometimes followed by some points towards tornus; the underside yellow with more or less complete series of small black spots just before termen.

Hab. Congo, Katanga, Kambove (*Neave*), 1 ♀; Germ. E. Africa, Usagara Distr. Kilossa (*Neave*), 1 ♀; Br. C. Africa, Lr. Shiré Valley, Chikawa (*Neave*), 1 ♀; N.E. Rhodesia, E. Luangwa Distr., Mterize R. (*Neave*), 1 ♂, 1 ♀ type; Mozambique, Gorongoza. *Exp.* 44 millim.

7774. **Attatha metaleuca**, sp. n. (Plate CCXXII. fig. 4.)

♂. Head and thorax creamy yellow; palpi at tips, frons, and antennæ blackish; tegulæ black, white at base; streaks on shoulders, a band across patagia and mesothorax, and a patch on metathorax black; fore and hind legs in front and the hind tarsi blackish; abdomen white tinged with ochreous, the basal crest black. Fore wing ochreous yellow; a subbasal wedge-shaped black mark in submedian interspace; a black fascia on antemedial part of inner margin; an oblique quadrate black patch from costa to lower end of cell with its lower extremities produced to points; an oblique black streak in postmedial part of submedian fold; a wedge-shaped black patch from apical part of costa to below vein 3 near termen, its inner edge indented above vein 6 and incurved with a fine black line before it below vein 6; a brownish line on medial part of termen, a small black spot at vein 3 and larger rounded spot at vein 2; the terminal area tinged with scarlet towards tornus, a subterminal black striga above vein 1. Hind wing creamy-white; a wedge-shaped fuscous band from apical part of costa to below vein 5; cilia fuscous at apex, then tinged with scarlet. Underside of both wings creamy white with the markings shewing faintly.

Hab. N. Nigeria, Zungeru (*Simpson*), 1 ♂ type. *Exp.* 36 millim.

Genus **COLBUSA**.

Type.
Colbusa, Wlk. xxxiii. 978 (1865) .... *euclidica*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and moderately scaled, the 3rd short or moderate; frons smooth; eyes large, round; antennæ of male ciliated; thorax clothed with hair and scales mixed, the metathorax with spreading crest; tibiæ slightly fringed with hair, the fore and hind tibiæ not spined; abdomen with dorsal crest at base only. Fore wing with the apex rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from well above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

7775. **Colbusa euclidica**.

Colbusa euclidica, Wlk. xxxiii. 978 (1865).

Head and thorax white; palpi, frons, antennæ, tegulæ, shoulders, a band across patagia and mesothorax and a patch on metathorax black-brown; pectus scarlet; fore and mid legs blackish brown,

hind legs ochreous brown; abdomen ochreous with some blackish at base and some scarlet at sides. Fore wing black-brown; a white fascia on basal half of costa leaving the costal edge blackish; an oblique white line from the fascia before middle to above inner margin near base; a narrow oblique white band from the extremity of the costal fascia to a crimson patch at tornus, the band with a hooked black mark on its lower extremity, the crimson patch with two small subterminal and two terminal black spots on it, the upper terminal spot larger; a terminal black line with a narrow white band before it ending at the tornal patch; cilia brownish. Hind wing crimson; a terminal black-brown band, broad at apex, narrowing

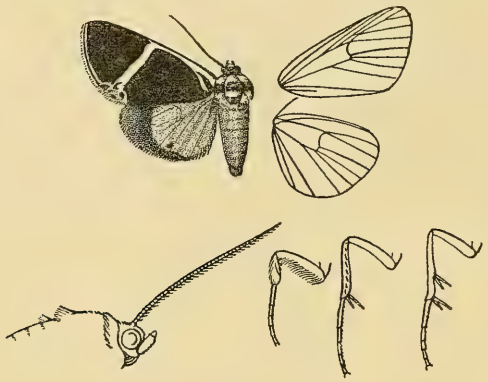


Fig. 2.—*Colbusa euclidica*, ♂. ½.

to tornus; a slight black streak on inner margin above tornus. Underside of fore wing with the white band extending to tornus and not extending to costa.

Ab. 1. Hind wing yellow.

Hab. Gold Coast, Cape Coast Castle (*Higlett*), 1 ♂, Ashanti, 2 ♂, 1 ♀ type; S. Nigeria, Lagos, Olokemiji (*Dudgeon*), 5 ♂, Mama (*Dudgeon*), 1 ♀, Onitsha, 1 ♂, 1 ♀. *Exp.* 30–48 millim.

Genus **ACANTHODELTA.**

Type.

Acanthodelta, Hmpsn. A. M. N. H. (8) i. p. 487 (1908) ..... *distriga.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and moderately scaled, the 3rd porrect; frons smooth, with tuft of hair above; eyes large, round; antennæ of male laminate; thorax clothed entirely with hair and without crests; tibiæ smoothly scaled, all the tibiæ spined; abdomen smoothly scaled and without crests. Fore wing short and broad, the apex rounded, the termen evenly curved, crenulate; vein 3 from well before angle of cell; 5 from above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the apex extending to well beyond tornus of fore wing, the termen crenulate;

the cell about half the length of wing; vein 3 from well before angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 approximated to the cell to middle.

7776. Acanthodelta distriga.

Acanthodelta distriga, Hmpsn. A. M. N. H. (8) i. p. 487 (1908).

♂. Head and thorax dull reddish brown; antennæ rufous, the shaft white above; legs and abdomen grey-brown. Fore wing grey-brown with a cupreous gloss; a black point at lower angle of cell; a whitish streak in discal fold from the cell to well before termen; a whitish streak in submedian fold from middle to well

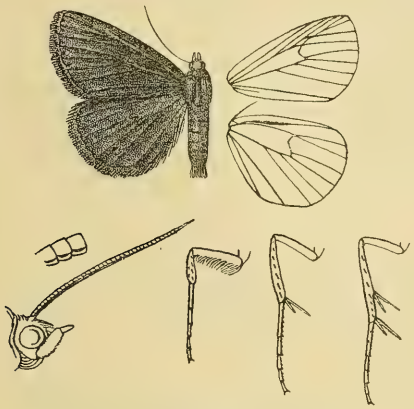


Fig. 3.—*Acanthodelta distriga*, ♂. ½.

before termen with a black postmedial point on it; a terminal series of black points. Hind wing glossy grey-brown with a slight waved dark terminal line; the underside greyer with slight dark irroration, a black discoidal point.

Hab. Cape Colony, Table Mt. (*Meade-Waldo*), 1 ♂ type. *Exp.* 40 millim.

Genus **GRAMMODES.**

	Type.
Grammodes, Guen. Noct. iii. p. 275 (1852)	*geometrica.*
Prodotis, John. Hor. Soc. Ent. Ross. xxxix. p. 622 (1910).....	*stolida.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd moderate, oblique; frons smooth, with tuft of hair above; eyes large, round; antennæ of male ciliated; thorax clothed with hair and hair-like scales and without crests; tibiæ moderately fringed with hair, the fore tibiæ not spined, the hind tibiæ spined to base; abdomen smoothly scaled and without crests. Fore wing with the apex rounded, the termen evenly curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to

form the areole; 11 from cell. Hind wing with the cell about one-third length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the medial and postmedial bands outwardly oblique.
  a. Fore wing with ocellate mark above tornus.
    a^1. Fore wing without oblique white striga from costa towards apex.
      a^2. Fore wing with the postmedial band strongly incurved below vein 3 with a large ocellate mark beyond it above tornus ..... *ocellata.*
      b^2. Fore wing with the postmedial band much less strongly incurved below vein 3 and with smaller ocellate mark beyond it above tornus ..... *oculicola.*
    b^1. Fore wing with oblique white striga from costa towards apex ..... *pulcherrima.*
  b. Fore wing without ocellate mark above tornus.
    a^1. Fore wing with oblique white striga from costa towards apex, the postmedial band ending at vein 4. *arenosa.*
    b^1. Fore wing without oblique white striga from costa towards apex, the postmedial band extending to above vein 2 near termen, then bent inwards to inner margin ..... *justa.*

B. Fore wing with the medial and postmedial bands nearly erect.
  a. Fore wing with the postmedial band not incurved below vein 3.
    a^1. Fore wing with the postmedial band straight from costa to above inner margin.
      a^2. Fore wing with the postmedial band angled inwards at inner margin to near the antemedial band.
        a^3. Fore wing with the antemedial band almost erect; hind wing with the medial white band obsolescent ..... *congenita.*
        b^3. Fore wing with the antemedial band more oblique; hind wing with the medial white band distinct ..... *geometrica.*
      b^2. Fore wing with the postmedial band not angled inwards to inner margin ..... *cooma.*
    b^1. Fore wing with the postmedial band slightly excurved from below costa to above inner margin ... *quæsita.*
  b. Fore wing with the postmedial band incurved below vein 3.
    a^1. Fore wing with the medial band straight.
      a^2. Hind wing fuscous brown ..... *stolida.*
      b^2. Hing wing fulvous yellow ..... *euclidioides.*
    b^1. Fore wing with the medial band excurved in the cell and incurved below it.
      a^2. Fore wing with the postmedial line oblique below the costa ..... *boisdeffrei.*
      b^2. Fore wing with the postmedial line excurved below the costa ..... *palæstinensis.*

C. Fore wing with the medial band oblique and confluent with the nearly erect postmedial band on inner area ... *microgonia.*

7777. **Grammodes ocellata.** (Plate CCXXII. fig. 5.)

Grammodes ocellata, Tepper, Comm. Native Ins. S. Austr. pt. 2, p. 46 (1890).
Grammodes excellens, Lucas, P. Linn. Soc. N.S.W. (2) vii. p. 257 (1892).

Head and thorax dark brown tinged with greyish; palpi white except behind; lower part of frons white; antennæ with the shaft whitish in front towards base; pectus and legs white, the tibiæ slightly tinged with brown, the tarsi brown ringed with white; abdomen grey-white irrorated with brown and suffused with brown on basal half, the anal tuft ochreous white, the ventral surface white. Fore wing black-brown; an oblique yellowish white band from costa before middle to inner margin beyond middle; an oblique yellowish white band from costa beyond middle to just before termen above vein 2, then strongly incurved and narrow to inner margin, enclosing an ocellate black mark irrorated with blue-white with some yellow marks round it defined by a curved black-brown line above, and on inner side and on outer side by the terminal line; cilia yellowish white with a brown line near tips. Hind wing black-brown; an obliquely curved white band from below middle of costa to just above tornus towards which it narrows; slight white marks before termen towards apex and below middle; cilia white, brown at apex, middle, and tornus. Underside of fore wing with the basal half white with oblique outer edge, the terminal half black-brown, with a white band excurved to vein 3 then incurved and narrowing to near tornus; hind wing with the basal half white with oblique black antemedial line and curved medial line with slight white marks beyond it, the white marks before termen more distinct.

Hab. Queensland, Brisbane (*Lucas*, *Turner*), 1 ♂, 4 ♀; W. Australia, Sherlock R. (*Clements*), 1 ♂, 2 ♀. *Exp.* 40–52 millim.

7778. **Grammodes oculicola.** (Plate CCXXII. fig. 6.)

Grammodes oculicola, Wlk. xiv. 1446 (1858).
Grammodes oculata, Snell. Tijd. v. Ent. xxiii. p. 103, pl. viii. f. 6 (1880).

Head and thorax dull reddish brown; abdomen pale reddish brown; palpi, pectus, legs, and ventral surface of abdomen whitish tinged with brown. Fore wing blackish brown; an oblique yellowish white band from costa before middle to inner margin beyond middle where there is some red-brown on it; an oblique yellowish white band from costa beyond middle to below vein 3 towards termen, then bent inwards, oblique, narrow, and defined by black to inner margin near the antemedial band; a brownish white line from termen below apex to beyond the angle of the postmedial line, then diffused and enclosing a black ocellate mark above tornus with slight white streaks above and below it on veins 2 and 1; cilia ochreous with a brownish line at middle. Hind wing fuscous brown; an oblique white band from middle of costa to submedian fold, then bent inwards, narrow, and ending at vein 1; a blackish

terminal line with some ochreous white before it above and below middle; cilia white, black-brown at apex, middle, and towards tornus. Underside of fore wing brownish white to the oblique white antemedial band, a curved white postmedial band; hind wing with the basal half white, the basal area irrorated with brown, obliquely curved black-brown medial and postmedial lines, the latter with some white beyond it on inner area.

Hab. Celebes; Br. N. Guinea, Port Moresby, 1 ♂, 3 ♀, New Hebrides (*Mathew*), 1 ♀; N. Australia, Baudin I. (*J. J. Walker*), 2 ♂, 3 ♀, Adelaide R. (*J. J. Walker*), 1 ♂, Port Darwin (*Buckland, J. J. Walker*), 4 ♂, 1 ♀; Queensland, Townsville (*Dodd*), 1 ♀, Cooktown (*de la Garde*), 1 ♂, Brisbane (*Lucas, Turner*), 2 ♂, 2 ♀; N. S. Wales, Sydney (*Diggles*), 1 ♂ type; Friendly Is., Vavau (*Eclipse Exp.*), 1 ♀; Cook's Is., Aitutáki I. (*J. J. Walker*), 1 ♂. *Exp.* 34–44 millim.

7779. Grammodes pulcherrima. (Plate CCXXII. fig. 7.)

Grammodes pulcherrima, Lucas, P. Linn. Soc. N.S.W. (2) vii. p. 258 (1892).
Grammodes clementi, Swinh. A. M. N. H. (7) viii. p. 133 (1901).

Head and thorax grey-brown; palpi, pectus, legs, and abdomen whitish tinged with brown. Fore wing fuscous brown tinged with grey; an oblique white band from costa before middle to inner margin beyond middle; a white point at upper angle of cell and minute spot above lower angle; an oblique white band from costa beyond middle to below vein 3 towards termen, then incurved, narrow, and ending at vein 1; an oblique white bar from costa towards apex; an incurved whitish line from before termen below apex to beyond the angle of the postmedial band, then diffused and enclosing a round black spot in submedian interspace with slight white streak above it; cilia with whitish line at base and whitish tips. Hind wing fuscous brown tinged with grey; an obliquely curved white band from middle of costa to above tornus towards which it narrows; some whitish before termen above and below middle, where there is a blackish mark; cilia white with a brown patch at middle. Underside of fore wing with the basal half white, an oblique whitish medial shade, a postmedial white band obliquely excurved to vein 3, then incurved, a curved white mark from costa before apex to vein 6; hind wing white, the terminal area suffused with fuscous brown, an obliquely curved blackish antemedial line, curved postmedial line with series of small white spots beyond it, and bar from costa towards apex to vein 6.

Hind tibiæ usually with a single spine between the mid and hind spurs.

Hab. Queensland, Brisbane (*Lucas, Turner*), 3 ♀; N. Australia, Alexandria (*Stalker*), 2 ♂, 1 ♀; W. Australia, Sherlock R. (*Clements*), 1 ♂, 4 ♀. *Exp.* 28–34 millim.

7780. Grammodes arenosa. (Plate CCXXII. fig. 8.)

Grammodes arenosa, Swinh. A. M. N. H. (7) ix. p. 422 (1902).

♂. Head and thorax grey-brown; abdomen white suffused with brown; palpi except at tips, pectus, legs, and ventral surfrce of abdomen white, the legs tinged with brown. Fore wing grey-brown, the postmedial area white irrorated with brown except towards costa; an oblique white band from costa before middle, to which it is slightly bent inwards, to middle of inner margin; an oblique white postmedial band from costa to vein 4, narrow at costa and expanding to vein 4; a narrow oblique white subterminal band from below apex to above inner margin hardly differentiated from the white postmedial area; cilia whitish at tips. Hind wing whitish suffused with brown; an oblique brown discoidal bar defined on outer side by a diffused white band; cilia white towards apex, blackish brown at middle and brownish towards tornus; the underside whitish with oblique sinuous medial and postmedial brownish lines from costa to vein 2, diffused subterminal band excurved at middle, and waved blackish terminal line.

Hind tibiæ with a single spine between the mid and hind spurs.

Hab. W. Australia, Roeburne (*Clements*), 1 ♂ type. *Exp.* 30 millim.

7781. Grammodes justa. (Plate CCXXII. fig. 9.)

Grammodes justa, Wlk. xiv. 1445 (1858).
Grammodes cæca, Pag Zoologica, xxi. Hft. 29, p. 108, pl. 1. f. 12 (1900).

Head and thorax reddish brown with a grey gloss; antennæ white in front; pectus, legs, and abdomen grey-brown. Fore wing dark brown with a cupreous gloss; a rather narrow oblique white band from costa before middle to inner margin beyond middle; a narrower white band from costa beyond middle to above vein 2 near termen, then bent inwards and linear to inner margin just beyond the antemedial band; a dark terminal line defined on inner side by ochreous from below apex to tornus; cilia white at apex, then grey-brown with darker lines near base and tips. Hind wing brown with a greyish gloss; an obliquely curved white band from below middle of costa to just above tornus; a blackish terminal line slightly defined on inner side by whitish above and below middle; a black spot in submedian fold before termen; cilia white, brown at apex and middle and with brown line through them towards tornus. Underside of fore wing grey-brown with an obliquely curved white postmedial band; hind wing white thickly irrorated with brown, the terminal area suffused with brown, a slight minutely waved brown postmedial line defined on outer side by small white lunules.

Hab. Bismarck Arch.; N. Australia, Port Darwin (*Lyell*), 1 ♀; Queensland, 1 ♂, Brisbane (*Lucas*, *Turner*), 1 ♂, 4 ♀, Moreton Bay (*Gibbons*, *Diggles*), 1 ♂, 2 ♀ type. *Exp.* 34–36 millim.

7782. Grammodes congenita. (Plate CCXXII. fig. 10.)

Grammodes congenita, Wlk. xiv. 1443 (1857).
Grammodes exclusiva, Pag. Reis. in Ost-Afr. ii. p. 121, pl 6. f. 19 (1907).

Head and thorax brown irrorated with white; abdomen whitish suffused with brown. Fore wing grey thickly irrorated with brown; a black subbasal line from costa to median nervure; a black patch from median nervure to inner margin before the rather oblique white antemedial band extending from below subcostal nervure to inner margin and tinged with rufous above and at inner margin, defined by black lines extending to costa where they are bent inwards and wider apart; medial area black-brown from below costa to inner margin; a rather oblique postmedial rufous band from vein 6 to inner margin, defined on inner side by a yellowish white line bent inwards to inner margin and with a black line from it bent inwards to costa, the band defined on outer side by black forming dentate marks at veins 6 and 4 and inner margin; a black patch from apex diffused on inner side, its outer edge oblique to vein 6, then bent inwards to just above the outer edge of the postmedial band; an obliquely curved whitish shade from termen just below apex to tornus; a fine waved black terminal line angled inwards to slight dentate marks in the interspaces. Hind wing brown, the terminal half suffused with fuscous; an oblique whitish band from middle of costa to inner margin towards tornus; an oblique whitish shade from vein 4 to termen at submedian fold; cilia white, brown at middle and towards tornus. Underside of fore wing grey tinged with brown, the terminal area suffused with fuscous, a dark postmedial line defined on outer side by a white band; hind wing whitish thickly irrorated with brown, the terminal area suffused with brown, a slight dark postmedial line.

Ab. 1. *exclusiva*. Fore wing with the white antemedial band very narrow.

Hab. Congo, Katanga, Kambove (*Neave*), 1 ♂; Br. E. Africa, Taveta (*Rogers*), 2 ♂; Br. C. Africa, Ruo Valley (*Neave*), 1 ♀, Fort Mangoche (*Neave*), 2 ♂, 1 ♀, Zomba (*Johnston*), 3 ♂, 2 ♀, Blantyre (*Neave*), 1 ♀; Mashonaland (*Dobbie*), 1 ♂, Salisbury (*Marshall*), 5 ♂, 2 ♀; Transvaal, Piet Retief (*Crawshay*), 1 ♂, 1 ♀, Modderfontein (*Cruger*), 1 ♂, Zoutspanberg (*Janse*), 1 ♀, Waterfalonder (*Ross*), 1 ♀, Johannesburg, 1 ♀, Pretoria (*Distant*), 1 ♂; Natal, Estcourt (*Hutchinson*), 1 ♂, 1 ♀, Durban (*Gueinzius, Marsden*), 2 ♂, 1 ♀ type; Madagascar. *Exp.* 36–46 millim.

7783. Grammodes geometrica.

Noctua geometrica, Fabr. Syst. Ent. p. 599 (1775); Godt. Lép. Fr. v. p. 114, pl. 53. f. 4; Mill. Icones, ii. pl. 75. ff. 4–6; Hmpsn. Moths Ind. ii. p. 531; John. Hor. Soc. Ent. Ross. xxxix. p. 626, pl. xviii. f. 7 *a*, xxi. f. 25, & xxiii. f. 50; Staud. Cat. Lep. pal. p. 245.
Phalæna ammonia, Cram. Pap. Exot. iii. p. 98, pl. 250. f. D (1779); Moore, Lep. Ceyl. iii. p. 179.

Noctua bifasciata, Petag. Spec. Ins. p. 38, f. 26 (1787).
Noctua linearis, Hübn. Beitr. ii. p. 26, pl. iv. f. T (1791).
Noctua chalciptera, Borkh. Schmett. Eur. iv. p. 771 (1792).
Noctua parallelaris, Hübn. Eur. Schmett., Noct. f. 324 (1802).

Head and thorax brown irrorated with grey; pectus, legs, and abdomen grey-brown. Fore wing pale reddish brown irrorated with grey; a black patch before the oblique yellowish white medial band, its inner edge extending obliquely from middle of cell to submedian fold, then erect to inner margin, the band extending to discal fold and with a slight black line from it to costa to which it is slightly bent inwards; medial area black from just above discal fold to inner margin; a rather oblique postmedial band from vein 6 to inner margin, yellowish white on inner side, rufous on outer, its inner edge bent inwards to inner margin near the medial

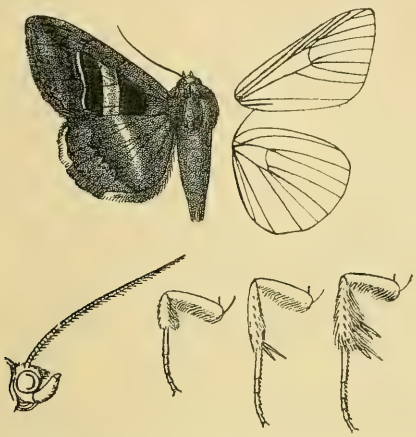


Fig. 4.—*Grammodes geometrica*, ♂. ½.

band and with a slight blackish line from it to costa to which it is bent inwards, the outer edge of the band defined by black, excurved at middle and slightly at vein 2 and inner margin; an oblique black mark from apex to above vein 6, where it is bent inwards to just above the outer edge of the postmedial band; a faint curved pale shade from apex to tornus; a slight crenulate dark terminal line; cilia with a faint dark line at middle. Hind wing brown, the terminal half tinged with fuscous; an oblique whitish band from middle of costa to above tornus; an oblique whitish shade from vein 3 to termen at submedian fold; cilia white, brown at middle and tornus. Underside of fore wing greyish brown with white postmedial band from below costa to inner margin; hind wing pale brown, a slight dark discoidal spot, faint minutely waved medial and postmedial lines, and a subterminal shade except on inner area.

Ab. 1. Fore wing with the medial white band very narrow and not extending above median nervure.

Ab. 2. Fore wing with the medial band bright yellow.

Hab. S. France, Frey & Leech Colls.; Spain, Leech Coll.; Italy; Austria, Carniola; Dalmatia; Greece, Merlin Coll.; Gold Coast, Ashanti, 1 ♂, Kumasi (*Whiteside*), 1 ♀; S. Nigeria, Old Calabar (*Cockburn*), 1 ♂, 2 ♀, Ilesha (*Humfrey*), 1 ♀; Congo, Opobo (*Marsden*), 1 ♂; Br. E. Africa, Eb Urru (*Betton*), 1 ♂, Nairobi (*Crawshay*), 1 ♂; Uganda, Wadelai (*Emin Pasha*), 1 ♀; Br. C. Africa, Fort Maguire (*Neave*), 1 ♀, Fort Magoche (*Neave*), 1 ♀, Blantyre (*Neave*), 1 ♂, Lr. Shiré Valley (*Neave*), 2 ♀; N.E. Rhodesia, Lr. Loangwa R. (*Neave*), 1 ♂; Mashonaland, Salisbury (*Marshall*), 1 ♂, 1 ♀; Bechuanaland, Lake N'Gami (*Lugard*), 1 ♂; Transvaal, Pretoria (*Distant*), 1 ♂; Natal, Durban (*Burrows, Meade-Waldo, Leigh*), 3 ♂, 2 ♀; Cape Colony, Plettenburg Bay (*Trimen*), 1 ♂; Farquhar Is. (*B. Fletcher*), 1 ♂; Armenia; Asia Minor, Bithynia; Persia; Formosa, Takow (*Hobson*), 1 ♂; W. China, Washan (*Pratt*), 1 ♂, Omei-shan (*Pratt*), 1 ♂, Chung-king (*Pratt*), 1 ♂, Chia-kou-ho (*Pratt*), 1 ♀, Ta-chien-lu (*Pratt*), 1 ♂; Punjab (*Horne*), 1 ♀, Almorah (*Boys*), 1 ♀, Allahabad, 1 ♀, Manpuri, 1 ♀; Sikhim (*Möller*), 1 ♀; Assam, Silhet (*Stainsforth*), 1 ♂, 1 ♀; Bengal, Calcutta, 1 ♂; Bombay (*Leith*), 2 ♀, Thanna Distr., Wangni (*Swinhoe*), 1 ♀, Mhow (*Swinhoe*), 1 ♀, Kanara (*Ward*), 1 ♂; Madras, Nilgiris (*Hampson*), 2 ♀; Ceylon, Colombo (*Nietner*), 2 ♀; Burma, Moulmein (*Clerk*), 1 ♀; Andamans, 1 ♀; Singapore (*Ridley*), 1 ♂, 1 ♀; Pulo Laut (*Doherty*), 1 ♂; Java (*Horsfield*), 1 ♂, 2 ♀; Queensland, Geraldton (*Turner*), 1 ♂. *Exp.* 38–52 millim.

Larva. Kirby, Butt. & Moths Eur. p. 281; Hffm. Raup. p. 146, pl. 36. f. 24.

Pale bluish grey with slender yellowish lines; two dorsal ochreous yellow stripes and a lateral pale yellow stripe defined by fuscous. Food-plants: *Polygonum persicaria* and *Cistus salvifolia*.

Cocoon strong and waterproof.

7784. **Grammodes cooma.** (Plate CCXXII. fig. 13.)

Grammodes cooma, Swinh. Cat. Het. Mus. Oxon. ii. p. 158 (1900).

Head, thorax, and abdomen grey-brown. Fore wing grey-brown; a black patch with oblique inner edge before the nearly erect white medial band which extends from below subcostal nervure to inner margin; medial area black from below costa to inner margin; a postmedial erect band from vein 7 to inner margin, its inner part white and narrow, its outer part rufous, defined on outer side by black, forming a dentate mark at vein 4 and smaller mark at vein 3; an oblique black shade from apex to vein 7, then angled outwards at vein 6 and incurved to join the black on outer edge of the postmedial band; a fine pale line at base of cilia. Hind wing fuscous brown; an oblique white band from costa before

middle to submedian fold; a waved black terminal line with white lunules before it from apex to vein 5 and an oblique bar from vein 2 to submedian fold; cilia brown, white towards apex and at submedian fold. Underside of fore wing grey-brown, a white postmedial band from below costa to inner margin, its inner edge slightly incurved at discal fold; hind wing pale brown with slight dark medial and postmedial lines with black spots on them at discal fold and white marks beyond them at discal and submedian folds, a broad blackish subterminal shade.

Ab. 1. Fore wing with the medial band bright yellow.

Hab. Celebes, Patinoean (*Cockayne*), 1 ♀; Queensland, Duaringa, 1 ♂ co-type, Brisbane (*Turner*), 1 ♂. *Exp* 46–56 millim.

7785. Grammodes quæsita. (Plate CCXXII. fig. 14.)

Grammodes quæsita, Swinh. A. M. N. H. (7) viii. p. 132 (1901).

Head and thorax brown mixed with grey; abdomen pale grey-brown; pectus, legs, and ventral surface of abdomen whitish tinged with brown. Fore wing grey thickly irrorated with brown; a large triangular black-brown patch from middle of cell to inner margin before an erect white medial band from below subcostal nervure to inner margin; the outer part of medial area black-brown except towards costa; a slight curved blackish postmedial line from costa to inner margin defined on outer side by a yellowish white line except towards costa, followed by a rufous band with dentate black marks on its outer edge at veins 4, 3, a point at vein 2, and triangular mark at inner margin; a dark brown apical patch with curved black mark on the lower part of its outer edge to the outer edge of the postmedial band; the terminal area with some blue-white suffusion except towards apex; some dark brown at middle of termen and a fine terminal black line. Hind wing brown, the terminal area suffused with fuscous; an oblique white band from middle of costa to above inner margin towards tornus; some whitish suffusion on terminal area above and below middle; cilia white at tips except at middle and tornus. Underside of fore wing grey suffused and irrorated with brown, a whitish postmedial band from below costa to inner margin; hind wing whitish irrorated with brown, the terminal area suffused with brown, a dark discoidal point and faint postmedial line defined on outer side by whitish except towards costa.

Hind tibiæ with a single spine between the mid and hind spurs.

Hab. N. Australia, Port Darwin (*Buckland*), 1 ♀; Queensland, Duaringa, 1 ♂, 1 ♀ type. *Exp.* 26–28 millim.

7786. Grammodes stolida.

Noctua stolida, Fabr. Syst. Ent. p. 599 (1775); Godt. Lép. Fr. v. p. 117, pl. 53. f. 5; Hmpsn. Moths Ind. ii. p. 532; John. Hor. Soc. Ent. Ross. xxxix. p. 622, pl. xviii. f. 5 *e*, & xxi. f. 26; Staud. Cat. Lep. pal. p. 244.
Noctua cingularis, Hübn. Eur. Schmett., Noct. ff. 352, 512 (1808).

Euclidia stupida, Herr.-Schäff. Schmett. Eur. ii. p. 423, Noct. ff. 297–8 (1845).

Grammodes curvilinea, Wlk. Proc. Nat. Hist. Soc. Glasgow, i. p. 361 (1869).

Head, thorax, and abdomen reddish brown tinged with grey; palpi white at base; pectus and legs whitish tinged with brown; ventral surface of abdomen white. Fore wing grey-brown; a large triangular black-brown patch from subcostal nervure to inner margin before the erect yellowish white medial band also extending from subcostal nervure to inner margin; the outer part of medial area black-brown except towards costa; a narrow yellowish white postmedial band, arising below costa, excurved to below vein 3, where it is angled inwards, then again excurved, followed by a rufous band from vein 6 to inner margin with a minute black spot on its outer edge below vein 6, dentate mark at vein 4, points at veins 3 and 2, and dentate mark at inner margin; a blackish mark from costa towards apex to vein 6, diffused on inner side and defined on outer side by whitish; some blackish at apex and brown at middle of termen; cilia brown with a fine whitish line at base and white patch at apex. Hind wing fuscous brown; an oblique white band from middle of costa to just above tornus where it narrows to a point; a subterminal white spot between veins 3 and 2; cilia white, brown at middle and tornus. Underside of fore wing with the basal half whitish irrorated with grey at costa, the terminal half fuscous, a white discoidal bar, white postmedial band slightly excurved to vein 2, then outwardly oblique, a subterminal series of white spots except at middle, slight towards costa and confluent towards tornus; hind wing white, the terminal area fuscous, narrowing to tornus, an oblique dark antemedial line and sinuous medial line converging towards inner margin near tornus, an incurved maculate subterminal white band on costal area and spot below vein 3.

Ab. 1. Fore wing with the white medial band reduced to a narrow line from below the cell to inner margin.

Ab. 2. *stupida*. Fore wing with the white medial band reduced to a small spot on inner margin; hind wing without the white subterminal spot between veins 3 and 2.

Hab. S. France; Spain; Italy, Zeller Coll.; Algeria, Batna (*Eaton*), 1 ♀; Austria, Carniola; Dalmatia, Leech Coll.; Greece, Merlin Coll.; Armenia; Asia Minor, Bithynia, Taurus; Syria, 1 ♂, 1 ♀, Leech Coll., Lebanon (*Pratt*), 1 ♂, 1 ♀; Sierra Leone (*Foxcroft*), 1 ♀; N. Nigeria, Zungeru (*Macfie*), 1 ♂, 1 ♀; Congo (*Marsden*), 1 ♂ type *curvilinea*; Sudan, White Nile, Gabt el Megahid (*Dunn*), 1 ♀; Abyssinia, Atbara (*Gerrard*), 1 ♂, Essen Gola (*Drake-Brockman*), 2 ♀; Somaliland, Bulhar (*Drake-Brockman*), 1 ♀; Br. E. Africa, Kilima'njaro (*Hannington*), 1 ♂, 1 ♀, Nakuta (*Bodeker*), 2 ♀, Machuna (*Betton*), 1 ♂, Eb Urru (*Betton*), 1 ♀, Munisu (*Betton*), 1 ♀, Nairobi (*Crawshay*), 1 ♂, Machakos (*Crawshay*), 3 ♂, 1 ♀; Uganda, Port Ugowe (*Johnston*), 1 ♀, Ketoma (*Doggett*), 3 ♂, 4 ♀; Germ. E. Africa, Moschi, 1 ♀; Br. C. Africa, Fort Maguire (*Neave*),

1 ♂, Chiromo (*de Jersey*), 1 ♂; Bechuanaland, Lake N'Gami (*Lugard*), 2 ♀, Ovampo Lake (*Ericsson*), 1 ♀; Transvaal, Limpopo, 1 ♂, Lydenburg, 1 ♀, Johannesburg (*Cregoe*), 1 ♀, Pretoria (*Distant*), 1 ♀; Natal, Maritzburg (*Burnup*), 1 ♀, Victoria Distr. (*Gooch*), 1 ♀; Basutoland, Maseru (*Crawshay*), 2 ♀; Orange R. Colony, Bloemfontein (*Eckersley*), 2 ♀; Cape Colony (*Sir A. Smith, Trimen*), 2 ♀, Deelfontein (*Sloggett*), 1 ♂; Aden (*Yerbury*), 1 ♂; Persia; W. Turkestan, Turcomania, Ferghana; Punjab (*Horne*), 1 ♀, Kulu (*Hocking*), 1 ♀, Campbellpur (*Yerbury*), 2 ♂, 1 ♀, Almorah (*Boys*), 1 ♂, Chittar Pahar (*Yerbury*), 1 ♀, Wuzeerabad (*Hearsey*), 3 ♂, 1 ♀, Allahabad, 1 ♂; Sind, 1 ♀, Karáchi (*Swinhoe*), 2 ♂, 1 ♀; Bombay, 1 ♀, Kutch, 1 ♀, Kanara (*Ward*), 1 ♂; Madras, 1 ♂, Coimbatore (*Walhouse*), 1 ♀; Burma, Theyetmyo (*Watson*), 1 ♂. *Exp.* 30–44 millim.

Larva. Kirby, Butt. & Moths Eur. p. 281; Hoffm. Raup. p. 146.

Yellowish grey with slender blackish lines. Food-plants: *Paliurus aculeatus*, *Rubus fruticosus*, *Coriaria myrtifolia*, and *Quercus*. 6–7.

7787. Grammodes euclidioides.

Grammodes euclidioides, Guen. Noct. iii. p. 276 (1852); Herr.-Schäff. Aussereur. Schmett. ff. 137–8.
Euclidia dubitans, Wlk. xiv. 1463 (1858).

Head and thorax grey-brown; frons white at sides; abdomen pale grey-brown; pectus, legs, and ventral surface of abdomen whitish tinged with brown. Fore wing grey irrorated with fuscous; a pale rufous medial erect band from subcostal nervure to inner margin, defined on inner side by a white line with black suffusion before it, the outer edge of the band slightly incurved; the outer part of medial area black-brown, narrowing to costa and inner margin; a narrow white postmedial line excurved to vein 3, then slightly incurved, and again somewhat excurved below vein 2, followed by a rufous band from vein 6 to inner margin, with small dentate black marks on its outer edge below vein 6 and at vein 4 and inner margin; some white points on postmedial part of costa; a blackish patch from apex, diffused on inner side, its outer edge oblique to vein 6 where it is bent inwards to the postmedial band; some brown suffusion on middle of termen and a fine waved black terminal line; cilia white at apex. Hind wing fulvous yellow, the basal area tinged with brown; a dark discoidal striga with slight line from it to submedian fold; an oblique dark line from below middle of costa to inner margin towards tornus; the terminal area blackish, narrowing to tornus, and with a narrow fulvous yellow subterminal band from vein 6 to tornus; cilia white, blackish at middle and tornus and with slight blackish spots towards apex. Underside of fore wing yellow with blackish discoidal striga, postmedial line slightly incurved below discal fold, the apical area blackish, with blackish subterminal band with waved edges and blackish terminal

band from it to submedian fold; hind wing with slight discoidal striga, faint sinuous postmedial line, the yellow subterminal band with waved edges.

Hab. Transvaal (*Ross*), 1 ♂, Barberton (*Rendall*), 1 ♂, Modderfontein (*Cruger*), 1 ♂, Rietfontein (*Janse*), 1 ♀, Pretoria (*Janse, Distant*), 3 ♂; Orange R. Colony, Bloemfontein (*Wilson, Eckersley*), 3 ♂, Vredefort Rd. (*Hamilton*), 1 ♂; Natal, Estcourt (*Hutchinson*), 1 ♂, Durban, 1 ♂ type; Basutoland, Masite (*Crawshay*), 1 ♂, Maseru (*Crawshay*), 1 ♂, 2 ♀; Cape Colony, Albany, 1 ♂. *Exp.* 30–36 millim.

7788. Grammodes boisdeffrei.

Ophiusa boisdeffrei, Oberth. Ét. Ent. i. p. 54, pl. 4. f. 6 (1876); Staud. Cat. Lep. pal. p. 244.

Head, thorax, and abdomen ochreous white; antennæ brownish; palpi white, brownish at tips; pectus, legs, and ventral surface of abdomen white, the legs slightly irrorated with brown. Fore wing pale ochreous irrorated and in parts suffused with red-brown; antemedial line black, slightly sinuous, from subcostal nervure to inner margin, a conical red-brown patch before it; a medial whitish band from subcostal nervure to inner margin, excurved in cell and incurved in submedian interspace; the outer part of medial area red-brown, narrowing to a point at inner margin, defined on outer side by the black postmedial line, which is oblique from costa, towards which it is obsolescent, to vein 6, incurved below vein 3, and bent inwards to inner margin; subterminal line whitish defined on inner side by red-brown, and by a slight black streak above vein 6, then by some blackish marks, oblique to vein 6, then incurved and slightly sinuous and bent outwards to near tornus; a small black spot on termen just below apex and some red-brown suffusion on middle of termen; cilia white with a brown line at middle. Hind wing ochreous white tinged with red-brown; an oblique dark medial line with some brown suffusion before it, followed by a white band; the terminal area suffused with black-brown, narrowing to tornus and leaving pale patches just before termen at apex and below middle; a blacker spot at middle of termen; a dark terminal line; cilia white with a dark line at middle from vein 4 to tornus. Underside white tinged in parts with ochreous; fore wing with a dark discoidal striga, sinuous postmedial line from vein 7 to submedian fold and brownish subterminal and terminal shades; hind wing with dark discoidal striga, slight sinuous line from lower angle of cell to submedian fold, curved slightly waved postmedial line from below costa to submedian fold, and sinuous subterminal shade.

Hab. Algeria, Batna (*Eaton*), 1 ♂, Hamman-es-Salahin (*Walsingham*), 2 ♂, 3 ♀; ? Palestine. *Exp.* 34–48 millim.

7789. Grammodes palæstinensis. (Plate CCXXII. fig. 15.)

Leucanitis palæstinensis, Staud. Iris, x. p. 299, pl. 9. f. 19 (1897); id. Cat. Lep. pal. p. 244.

♀. Head, thorax, and abdomen ochreous white; antennæ ringed with black; palpi white irrorated with brown; pectus, legs, and ventral surface of abdomen white, the legs irrorated with brown. Fore wing with the basal area and costal area to the subterminal line ochreous white tinged and irrorated with red-brown; antemedial line black, excurved below costa and incurved in submedian interspace, a conical dark brown patch before it from subcostal nervure to inner margin; medial band ochreous white tinged with rufous, excurved in cell and incurved below it; the outer half of medial area reddish brown except towards costa, narrowing to a point at inner margin, defined by the black postmedial line, which is excurved below costa and incurved below vein 3 and to inner margin, its outer edge defined by a creamy white line; the narrow postmedial area rufous except towards costa; a patch of fuscous suffusion on costal area with some white points on costa before the slight whitish subterminal line, defined on inner side by black marks, oblique to vein 6, then incurved and slightly angled outwards at veins 4 and 3; the terminal area suffused with grey-brown; a fine blackish terminal line; cilia white at base, with a dark line at middle and brownish tips. Hind wing with the basal half white slightly tinged with ochreous brown; a narrow oblique brown medial band; the terminal area suffused with black-brown, narrowing to tornus and leaving pale marks just before termen at apex and below middle; cilia white, brown at tips at middle. Underside white; fore wing with dark discoidal striga, sinuous postmedial line from below costa to submedian fold and subterminal and terminal brown shades; hind wing with slight discoidal spot, faint line from lower angle of cell to submedian fold, minutely waved postmedial line from below costa to submedian fold, subterminal black shade with dentate outer edge, and black terminal line with diffused patch before it at middle.

Hab. Palestine, 1 ♀. *Exp.* 34 millim.

7790. Grammodes microgonia.

Chalciope microgonia, Hmpsn. P. Z. S. 1910, p. 424, pl. xxxvii. f. 24.

Head, thorax, and abdomen grey-brown. Fore wing grey-brown irrorated with fuscous; a triangular velvety black patch in submedian interspace from near base to middle, its outer edge obliquely excised and slightly defined by white; a blackish point in end of cell; a triangular velvety black patch on postmedial area defined on inner and outer sides by whitish, its angles on discocellulars and vein 6 and its apex below vein 2, followed by a rufous band from

vein 6 to above inner margin, met at vein 6 by an oblique diffused black fascia from apex, its outer edge then defined by small dentate black marks, the mark above inner margin diffused to tornus; a fine blackish terminal line. Hind wing grey-brown with a broad diffused fuscous subterminal shade, a fine black terminal line; the underside grey-brown tinged with fuscous.

Hab. N.E. Rhodesia, E. Luangwa Distr., Petauke (*Neave*), 1 ♀ type, Selukwe (*Short*), 1 ♂. *Exp.* 44 millim.

Genus **CHALCIOPE.**

	Type.
Chalciope, Hübn. Verz. p. 268 (1827)	*cephise.*
Trigonodes, Guen. Noct. iii. p. 281 (1852)	*cephise.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd moderate and fringed with scales in front; frons smooth, with tuft of hair above; eyes large, round; antennæ of male typically ciliated; thorax clothed with hair and scales mixed and without crests; fore tibiæ of male fringed with long hair on outer side, the mid and hind tibiæ with long hair on inner side, the fore tibiæ not spined, the mid and hind tibiæ spined; abdomen smoothly scaled and without crests. Fore wing with the apex somewhat produced and acute, the termen oblique and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell; male with the cell and area just below it on underside clothed with rough hair. Hind wing with the cell about one-third length of wing; veins 3 and 4 from angle of cell; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only; male with the basal area on underside clothed with rough hair.

Sect. I. Antennæ of male dilated into a knot fringed with hair above just before middle, then bipectinate to near apex.

7791. **Chalciope disjuncta.**

Chalciope disjuncta, Moore, Lep. Atk. p. 171 (1882); Hmpsn. Moths Ind. ii. p. 528.

Head and thorax red-brown, the vertex of head with some blackish; tegulæ brownish white at base with black medial line; pectus, legs, and abdomen grey-brown with a reddish tinge. Fore wing grey-brown slightly irrorated with blackish, the veins tinged with reddish; an elongate triangular black patch defined by whitish lines in submedian interspace from near base to beyond middle; a black point in middle of cell; a triangular black postmedial patch defined by whitish lines, its angles at middle of discocellulars, at vein 7 towards apex, and below vein 2 towards tornus, a rufous band beyond it from apex to submedian fold followed by a faint double slightly waved dark line with some black points on the outer line on inner area; a terminal series of blackish points; cilia reddish brown with a darker line near base. Hind wing grey-

brown with a reddish tinge, a fuscous subterminal shade and fine terminal line; the underside with diffused curved postmedial line and subterminal shade.

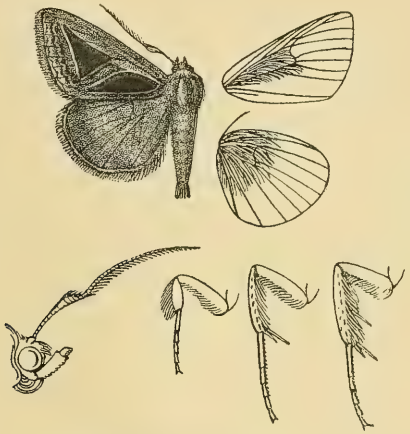


Fig. 5.—*Chalciope disjuncta*, ♂. ½.

Hab. Bombay, 1 ♀ type; Madras, Nilgiris (*Hampson*), 1 ♂; Travancore, Pirmád (*Imray*), 1 ♀. *Exp.* 40–48 millim.

Sect. II. Antennæ of male normal.

A. Fore wing without incurved subterminal black-brown band extending to apex.
  a. Fore wing with the antemedial triangular black-brown patch extending above the base of vein 2 ..... *hyppasia.*
  b. Fore wing with the antemedial triangular black-brown patch not extending above the base of vein 2.
    a^1. Fore wing with the antemedial black-brown patch very narrow and not extending to vein 1 ..... *pusilla.*
    b^1. Fore wing with the antemedial black-brown patch broader and extending to vein 1 ..... *cephise.*
B. Fore wing with incurved subterminal black-brown band extending to apex ..... *lucasi.*

7792. Chalciope hyppasia.

Noctua hyppasia, Cram. Pap. Exot. iii. p. 99, pl. 250. f. E (1779); Moore, Lep. Ceyl. iii. p. 186; Indian Museum Notes, v. p. 161, pl. 13. f. 5; Hmpsn. Moths Ind. ii. p. 527.
Phalæna deliana, Stoll. Cram. Pap. Exot. v. p. 160, pl. 36. f. 4 (1790).
Ophiusa anfractuosa, Boisd. Faun. Ent. Madag., Lep. p. 104, pl. 15. f. 6 (1833).
Trigonodes acutata, Guen. Noct. iii. p. 283, pl. 22. f. 6 (1852).

Trigonodes inacuta, Guen. Noct. iii. p. 284 (1852).
Trigonodes exportata, Guen. Noct. iii. p. 284 (1852).
Trigonodes compar, Wlk. xiv. 1451 (1858).

♂. Head grey-brown; thorax ochreous grey with a brown streak on dorsum of tegulæ and patagia; pectus, legs, and abdomen ochreous whitish. Fore wing grey-white tinged with brown; an antemedial blackish brown patch defined by whitish lines in submedian interspace from near base to beyond middle, its apex extending to the cell above base of vein 2, separated, except by a streak above median nervure, by an oblique whitish band from a triangular blackish brown postmedial patch defined by whitish lines except above and with its angles at lower angle of cell, at vein 6 towards apex and below vein 2 towards tornus; a reddish brown shade beyond the postmedial patch followed by an incurved whitish line from apex to near tornus, with some blackish brown suffusion before it above and below middle and blackish points on its outer edge at veins 4, 3, 2; a whitish shade before the dark terminal line which extends from apex to submedian fold; cilia whitish with a brown line near base. Hind wing ochreous whitish, the veins tinged with brown; a faint curved brown postmedial line from below costa to vein 2; a brown subterminal shade, broad at apex and ending on termen at vein 1; a dark terminal line from apex to submedian fold; cilia whitish with a brown line near base. Underside of both wings ochreous whitish tinged with rufous; fore wing with an incurved brown subterminal shade; hind wing with a brown subterminal shade from costa to submedian fold.

♀. Browner, especially the hind wing.

Ab. 1. Fore wing much redder brown, the white markings reduced.—Bougainville.

Ab. 2. Fore wing with the oblique medial band very narrow and not nearly extending to the pale costal area.

Ab. 3. *inacuta*. Fore wing with the postmedial triangular patch shorter, rounded below and with the white on its edges stronger.

Hab. Sierra Leone (*Morgan*, *Smith*), 2 ♂, 2 ♀; Gold Coast, Appan, 1 ♂; S. Nigeria, Lagos (*Boag*), 1 ♀, Old Calabar (*Cockburn*, *Crompton*), 5 ♂, Sapele (*Sampson*), 1 ♂; N. Nigeria, Bida (*Macfie*), 1 ♀, Zungeru (*Macfie*), 1 ♀; Cameroons, 1 ♂; Congo, Katanga, Kambove (*Neave*), 1 ♂; Angola, San Salvador, 1 ♂; Sudan, Port Sudan (*Mrs. Waterfield*), 2 ♀, White Nile, Gabt el Megahid (*Dunn*), 1 ♀; Abyssinia, Atbara (*Gerrard*), 1 ♀, Zegi Tsana (*Degen*), 1 ♀; Br. E. Africa, Mombasa (*de la Garde*), 1 ♂, Taveta (*Rogers*), 1 ♀, Sanduk (*Betton*), 1 ♀, Nairobi (*Crawshay*), 1 ♀, Eb Urru (*Betton*), 1 ♀; Uganda, Entebbe (*Johnston*), 1 ♂, Wadelai (*Emin Pasha*), 1 ♀, Ruwenzori (*Wollaston*), 1 ♀; Br. C. Africa, M'langi Boma (*Neave*), 1 ♀, Zomba (*Johnston*), 1 ♂, Deep Bay (*Crawshay*), 1 ♀; Mozambique (*Ansorge*, *Muir*), 1 ♂, 1 ♀, Delagoa Bay (*Junod*), 1 ♂; Transvaal, Bultfontein (*Janse*), 1 ♀; Natal, Durban (*Gueinzius*, *Burrows*), 1 ♂, 2 ♀; Cape Colony (*Sir A. Smith*),

1 ♂, Grahamstown, 1 ♀, Deelfontein (*Sloggett*), 1 ♀; Madagascar, Betsileo (*Cowan*), 1 ♀; Mauritius, 1 ♀; Rodriguez (*Gulliver*), 1 ♂, 1 ♀; Comoro Is., Mayotta (*Meade-Waldo*), 1 ♂; Gloriosa (*Meade-Waldo*), 1 ♂; Seychelles, Felicité (*Meade-Waldo*), 2 ♂, Le Cerf (*Meade-Waldo*), 1 ♂, 2 ♀, Mahé (*Meade-Waldo*), 2 ♂, 1 ♀; Aden (*J. J. Walker*, *Yerbury*), 3 ♂, 5 ♀; Loochoo Is. (*Pryer*), 1 ♂, 1 ♀; Formosa (*Seebohm*), 1 ♂, Takow (*Hobson*), 1 ♂, 2 ♀; Centr. China, Foo-chau (*Lay*), 1 ♂, 1 ♀ type *compar*, Ichang (*Mrs. Pratt*), 1 ♀; Shipy-shan, 1 ♀, Fokien, Sam-sah (*de la Garde*), 1 ♀; W. China, Chia-ting-fu (*Pratt*), 2 ♀; Punjab, Kulu, Sultanpur (*G. Young*), 1 ♂, Kangra (*Hocking*), 3 ♀, Masuri, 1 ♂, Allahabad, 1 ♂, Manpuri, 1 ♂, Cawnpore (*Betton*), 1 ♂; Assam, Shillong (*Parish*), 1 ♀; Bengal, Calcutta, 2 ♂; Baluchistan, Ormara (*Cumming*), 1 ♂; Sind, Karáchi (*Swinhoe*), 1 ♂; Bombay, 1 ♂, 1 ♀, Poona (*Swinhoe*), 1 ♂, Ratnagiri (*Jayaker*), 1 ♀; Madras, Nilgiris (*Hampson*), 1 ♀, Coimbatore (*Walhouse*), 1 ♂; Ceylon, Colombo (*Nietner*), 1 ♂, 1 ♀; Burma, Moulmein (*Clerk*), 1 ♂, 1 ♀; Andamans (*Rogers*), 2 ♂, 1 ♀; Nicobars (*Rogers*), 1 ♀, Camorta, 1 ♀, Nancowry, 1 ♂, 1 ♀; Sumatra, Pulo-Wek Is. (*Meade-Waldo*), 1 ♀; Philippines, Tacao (*MacGregor*), 1 ♂, Taytai (*Betton*), 1 ♀; Java (*Horsfield*), 1 ♂, Tanjong Priok (*J. J. Walker*), 1 ♂, 1 ♀; New Guinea (*Mathew*), 1 ♂; Solomons, Bougainville (*Meek*), 1 ♀, Lord Howe I., 1 ♂; N. Australia, Adéle I. (*J. J. Walker*), 1 ♂, Bathurst I. (*J. J. Walker*), 1 ♂, Baudin I. (*J. J. Walker*), 1 ♀, Port Darwin (*J. J. Walker*, *Lyell*), 1 ♂, 1 ♀; Queensland, Brisbane (*Turner*), 1 ♂, 1 ♀; N. S. Wales (*Lambert*, *de la Garde*), 3 ♂. *Exp.* 34–50 millim.

7793. **Chalciope pusilla.** (Plate CCXXII. fig. 16.)

Grammodes pusilla, Holl. Psyche, vii. p. 86, pl. ii. f. 26 (1894).

♂. Head, thorax, and abdomen ochreous white. Fore wing ochreous white faintly tinged with brown; a narrow elongate triangular black-brown patch in submedian interspace from near base to well beyond middle, not extending to vein 1 and with its apex at origin of vein 2; a triangular postmedial black-brown patch, its angles at middle of discocellulars, on vein 7 towards apex and below vein 3 towards tornus, its outer edge defined by a slightly waved white line; a dark subterminal line from apex to submedian fold; a terminal series of black points. Hind wing creamy white; a slight dark terminal line from apex to vein 2.

♀. Hind wing suffused with brown.

Hab. N. Nigeria, Minna (*Macfie*), 1 ♀; Gaboon, Ogové R., 1 ♂ cotype. *Exp.* ♂ 26, ♀ 30 millim.

7794. Chalciope cephise.

Noctua cephise, Cram. Pap. Exot. iii. p. 59, pl. 227. f. C (1779); Hmpsn. Moths Ind. ii. p. 528.
Trigonodes maxima, Guen. Noct. iii. p. 282 (1852).

♂. Head, thorax, and abdomen greyish ochreous tinged with brown; palpi and frons dark reddish brown; antennæ with the shaft whitish above; pectus and fore and mid femora dark brown, the fore tibiæ and tarsi white. Fore wing greyish ochreous tinged with brown and slightly irrorated with black; a triangular black-brown patch defined by white lines in submedian interspace from near base to well beyond middle, its apex at origin of vein 2, separated by an oblique white band from a triangular black-brown

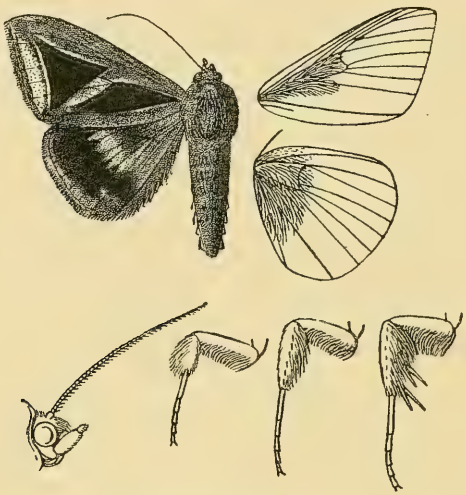


Fig. 6.—*Chalciope cephise*, ♂. ½.

postmedial patch defined by white lines, its angles at middle of discocellulars, on vein 7 towards apex, and on vein 1 near tornus; a dark shade from apical part of costa and a series of black points on outer edge of the white line defining the outer edge of the post-medial patch; the termen and cilia dark brown except towards tornus. Hind wing ochreous suffused with brown; a dark medial shade from costa to submedian fold, diffused in the cell to near base, separated by a pale ochreous band from a fuscous black sub-terminal shade, extending to termen on apical area, then narrower and ending at submedian fold where it is produced to a point near termen. Underside of fore wing suffused with red-brown except on inner area, the cell and area below and beyond it suffused with black partly interrupted by an obliquely curved reddish band from

lower angle of cell to submedian fold; hind wing ochreous whitish, the costal area broadly suffused with red-brown.

♀. Fore wing with the oblique medial band replaced by a large triangular ochreous white patch with its base towards costa, a blackish streak above the middle of its base, the triangular postmedial black patch replaced by a band before the subterminal line pointed at extremities and its inner edge curved.

Ab. 1. ♀. Fore wing with the ground-colour ochreous white; hind wing bright yellow without any brown on basal half, the subterminal band much reduced.

Hab. Bengal (*James*), 2 ♀, Calcutta (*Hearsey*), 1 ♂; Burma, Moulmein (*Clerk*), 1 ♂, 2 ♀; Borneo, 2 ♀; Dutch N. Guinea, Mimika Bay (*Wollaston*), 2 ♂; Ké Is., 1 ♂; Fiji (*Mathew*), 1 ♂, 1 ♀; Samoa, Tutuila I. (*Nicholl*), 1 ♂, 1 ♀. *Exp.* 52–62 millim.

7795. **Chalciope lucasi.** (Plate CCXXII. fig. 17.)

Trigonodes lucasii, Guen. Noct. iii. p. 282 (1852).
Trigonodes problematica, Wlk. xiv. 1448 (1858).

Head and thorax greyish ochreous tinged with red-brown especially the vertex of head and tegulæ, the latter tipped with white, the patagia edged with blackish; fore and mid legs tinged with fuscous; abdomen greyish ochreous. Fore wing greyish ochreous tinged with brown, the costal edge fuscous; a blackish streak in upper part of cell; a triangular black antemedial patch, its base above inner margin and its apex on median nervure beyond origin of vein 2, separated by an oblique pale medial band from an incurved black-brown postmedial band with pointed extremities below costa and above inner margin, followed by an incurved reddish brown band with two fine black lines on it; an obliquely incurved black-brown subterminal band from just below apex to just before tornus, edged by black and with black spot below apex, followed by a rather strong white line; the termen reddish brown with a rather strong black terminal line; cilia reddish brown. Hind wing greyish suffused with brown; the terminal area fuscous except towards tornus; a black terminal line defined on inner side by grey except towards apex; cilia greyish. Underside of both wings greyish ochreous, the rough hair at base tinged with rufous; fore wing with a fuscous subterminal shade.

Hab. Jamaica, 1 ♂, 1 ♀; Haiti (*Hearne*, *Tweedie*), 2 ♂, 1 ♀ type *problematica*. *Exp.* 44–48 millim.

Genus **CUNEISIGNA**, nov.

Type, *C. obstans*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and broadly scaled, the 3rd rather long; frons smooth, with tuft of hair above; eyes large, round; antennæ of male with bristles and

cilia; thorax clothed with scales and hair mixed, and without crests; fore tibiæ fringed with long hair, the mid and hind tibiæ moderately fringed with hair, the mid tibiæ of male dilated with a groove containing a fringe of large scales, the fore tibiæ not spined, the hind tibiæ spined between the mid and terminal spurs only; abdomen smoothly scaled and without crests. Fore wing with the apex somewhat produced and acute, the termen evenly curved and crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about one-third length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the pale postmedial band produced to a rounded knob on outer side at middle.
   a. Fore wing with the antemedial black patch wedge-shaped ..... *obstans.*
   b. Fore wing with the antemedial black patch narrow and attenuate at extremities ..... *cumamita.*
B. Fore wing with the pale postmedial band produced to a strong fork on outer side at middle ..... *rivulata.*

7796. Cuneisigna obstans.

Trigonodes obstans, Wlk. xiv. 1449 (1858).
Trigonodes hemidelta, Mab. Ann. Soc. Ent. Fr. 1880, p. 46.

Head and thorax greyish ochreous tinged with brown, the tegulæ with three brown lines, a brown line across middle of patagia and thorax; abdomen greyish ochreous with slight dark irroration.

Fig. 7.—*Cuneisigna obstans*, ♂. ½.

Fore wing greyish ochreous, the costal and terminal areas tinged with brown, the basal area with some black irroration; an oblique wedge-shaped black patch defined by white lines except above, from inner margin near base to median nervure at lower angle of cell, its

lower extremity just above vein 1, a black streak above its apex in and beyond lower end of cell, almost bisected by an oblique striga of the ground-colour; five fine oblique brownish postmedial lines arising below costa, slightly sinuous and the three outer lines excurved at middle, at vein 1 very strongly bent inwards to inner margin below the antemedial black patch; a black-brown subterminal band defined by white lines shading to a pale brown point edged with black below apex and pale brown at middle, its inner edge incurved above and below middle and excurved at middle, its lower extremity bent outwards and ending above tornus, followed by two indistinct dark lines arising below apex and excurved at middle; a fine sinuous black line with series of black points on it just before termen; cilia whitish, with brown line near base and fine dark line near tips which are reddish brown. Hind wing ochreous white irrorated with brown except at base, the terminal area suffused with fuscous brown; a sinuous blackish line before termen; cilia white with fine dark lines near base and tips which are reddish brown at middle; the underside white irrorated with black, the costal area and terminal area to vein 4 tinged with red-brown, a series of black points before termen.

Hab. Zanzibar; Transvaal, Limpopo, 1 ♀, Barberton, 1 ♂; Zululand (*Anderson*), 1 ♀; Natal, Estcourt (*Hutchinson*), 2 ♂, 3 ♀, Durban (*Gooch*), 1 ♂, 1 ♀; Cape Colony (*Sir A. Smith*), 1 ♀ type, Cape Town, 1 ♂. *Exp.* 36–44 millim. Type † ♂ *hemidelta* in Coll. Mabille.

7797. Cuneisigna cumamita. (Plate CCXXII. fig. 18.)

Chalciope cumamita, Beth.-Baker, A. M. N. H. (8) viii. p. 528 (1911).

♂. Head and thorax pale ochreous tinged with red-brown; palpi browner except 3rd joint; frons with brown line; tegulæ with three red-brown lines, the patagia with oblique bars near base and tips, the prothorax with brown line; abdomen ochreous white, dorsally tinged with brown, ventrally irrorated with brown. Fore wing greyish ochreous irrorated with a few black scales to the postmedial line; a subbasal black striga from costa below which it is angled outwards; an oblique black-brown fascia defined by yellow-white from above inner margin near base to before the postmedial line below vein 3, pointed at extremities; a black point in middle of cell; a brownish mark defined by yellow-white and by black on its inner side except towards base on extremity of median nervure, running inwards to a point below the medial black point and outwards to a rounded lobe beyond lower angle of cell; three fine double postmedial brown lines filled in with yellowish white from below costa near apex to submedian fold, then bent inwards to inner margin before middle; a reddish brown band defined by black and with a yellow line on its outer side from below apex, where it ends in a point, to above inner margin towards tornus, excurved at middle and bent inwards at lower extremity, a double

rather diffused fuscous line beyond it; a fine black subterminal line followed by a double brown line filled in with yellowish white; a fine black terminal line; cilia red-brown at tips. Hind wing yellowish white; the terminal area brown to vein 1, narrowing to apex and with a slight punctiform dark line on its inner side; a slight dark line just before termen; cilia yellowish white, with a rather diffused brown line near base and fine line near tips except towards tornus; the underside irrorated with brown, a double black discoidal point, postmedial line excurved below costa, and a series of black points just before termen and two small lunules in submedian interspace.

Hab. Br. E. Africa, Elburgon Ry. Station, type † ♂ in Coll. Bethune-Baker; Transvaal, White R. (*Cooke*), 1 ♂. *Exp.* 40 millim.

7798. **Cuneisigna rivulata.** (Plate CCXXII. fig. 19.)

Chalciope rivulata, Hmpsn. Ann. S. Afr. Mus. ii. p. 334 (1902).

Head and thorax ochreous white irrorated with brown, the vertex of head and metathorax tinged with red-brown, the tegulæ with three fine brown lines; abdomen ochreous white tinged with red-brown. Fore wing white thickly irrorated with brown, the costal area brownish with fine white streaks on the veins, the terminal area suffused with red-brown; a black line with a brown band above it arising below lower angle of cell, oblique to submedian fold, then strongly incurved to inner margin before middle; a blackish point in middle of cell; a slight wedge-shaped brown mark defined by fine white lines beyond lower angle of cell and running to a point on median nervure at origin of vein 2; the whitish postmedial area emitting a strong fork on outer side at vein 4 and with five fine brown lines on it arising well below apex and ending at submedian fold, the three outer lines bent outwards into the fork, this area defined on outer side by a fine black line extending to inner margin and excurved at vein 1; the red-brown terminal area with two slight brown subterminal lines filled in with grey and defined on outer side by greyish followed by some blackish, following the sinuations of the pale postmedial area; the termen whitish with a black point just below costa before apex, a fine dark line before termen with a black point at submedian fold and a fine dark terminal line; cilia whitish at base, brown at tips. Hind wing white; the terminal half and inner area tinged and irrorated with brown; a fuscous subterminal shade from below apex to submedian fold; a slight dark line just before termen with some black points on it; cilia white; the underside white tinged with red-brown and irrorated with black except on basal and inner areas, a brown subterminal shade from costa to submedian fold.

Hab. Br. E. Africa, Nairobi (*Crawshay*), 1 ♀; Transvaal, Pretoria (*Cooke*), 1 ♂; Natal, Weenen, 1 ♂ type, Durban (*Bell-Marley*), 1 ♀; Cape Colony, Transkei (*Miss F. Barrett*), 1 ♂, 1 ♀. *Exp.* 34–36 millim.

Genus **PARACHALCIOPE**, nov.

Type, *P. euclidicola*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to above vertex of head and moderately scaled, the 3rd long and acuminate; frons smooth; eyes large, round; antennæ of male with bristles and cilia; thorax clothed with hair and scales mixed and without crests; femora of male and the fore tibiæ fringed with long hair; the fore and hind tibiæ not spined; abdomen smoothly scaled and without crests, long and slender in male. Fore wing with the apex somewhat produced and acute, the termen evenly curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about one-third length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Hind tibiæ of male fringed with long hair.

A. Fore wing dark reddish brown except the costal area ..... *euclidicola*.
B. Fore wing grey-brown with black ante- and postmedial patches.
  a. Fore wing with the postmedial black patch triangular and separate from the antemedial patch which extends to beyond middle above inner margin..... *deltifera*.
  b. Fore wing with the postmedial black patch rounded below and confluent above with the antemedial patch which does not extend to middle ..... *binaria*.
C. Fore wing brownish ochreous, with elongate black patch from near base to beyond middle ..... *longiplaga*.

7799. Parachalciope euclidicola.

Fodina euclidicola, Wlk. xiv. 1438 (1858); Holl. Psyche, vii. p. 144, pl. iii. f. 11.
Mecodina furcifera, Hmpsn. Ann. S. Afr. Mus. ii. p. 363 (1902).

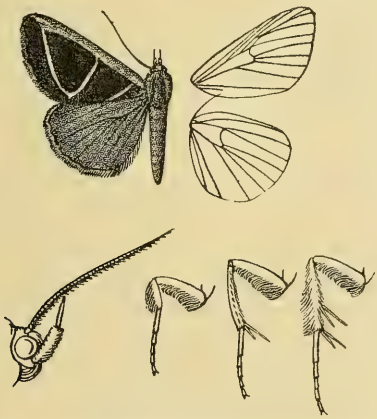


Fig. 8.—*Parachalciope euclidicola*, ♂. ½.

Head and tegulæ reddish brown; thorax and abdomen grey-brown. Fore wing black-brown with a reddish tinge, the costal

area grey-brown to beyond middle; a very oblique yellowish white line from subcostal nervure near base to inner margin before middle; an obliquely curved white line from middle of subcostal nervure to vein 1, where it is joined by an obliquely curved white line from below costa well beyond middle, the two lines emitting a slight spur to just above inner margin; a waved black terminal line; cilia greyish at tips. Hind wing fuscous brown with a fine waved blackish terminal line. Underside of both wings uniform fuscous brown.

Hab. S. Leone; S. Nigeria, Old Calabar (*Kingsley*, *Crompton*), 1 ♂, 1 ♀; Ilesha (*Humfrey*), 1 ♀; Fernando Po (*Fraser*), 2 ♀ type; Congo, Kambove (*Neave*), 1 ♂; Natal, type † ♂ *furcifera* in Coll. Druce. *Exp.* 36–44 millim.

7800. **Parachalciope deltifera.**

Chalciope deltifera, Feld. Reis. Nov. pl. 117. f. 24 (1874).
Chalciope albifissa, Hmpsn. P. Z. S. 1910, p. 424, pl. xxxvii. f. 6.

Head, thorax, and abdomen grey-brown. Fore wing greyish ochreous suffused with red-brown; a velvety black triangular patch, its angles on median nervure near base and lower angle of cell and on vein 1 near tornus, divided by an oblique white streak from another velvety black triangular mark on postmedial area, defined on outer side by white, its angles on discocellulars, on vein 7 below apex and submedian fold above tornus; a fuscous subterminal line diffused on outer side and bent outwards to apex; a fine waved black terminal line; cilia white at tips. Hind wing grey-brown; a fine black terminal line; cilia white at tips; the underside grey suffused with reddish brown.

Hab. W. Africa, Bogos, type † ♂ in Coll. Rothschild; S. Nigeria, Olokemeji (*Dudgeon*), 1 ♂; N. Nigeria, Minna (*Macfie*), 3 ♂, Baro (*Macfie*), 1 ♂, 1 ♀; N.W. Rhodesia, Alala Plateau, Mkushi Distr. (*Neave*), 1 ♀ type *albifissa*; N.E. Rhodesia, Bangweolo Distr. (*Neave*), 1 ♂. *Exp.* 34–40 millim.

7801. **Parachalciope binaria.** (Plate CCXXII. fig. 20.)

Trigonodes binaria, Holl. Psyche, vii. p. 86, pl. ii. f. 24 (1894).

Head, thorax, and abdomen greyish brown mixed with some blackish; palpi black-brown at base; pectus, fringes of hair on legs, and ventral surface of abdomen pale reddish brown. Fore wing grey-brown irrorated with blackish; a triangular black-brown patch on antemedial area confluent with a triangular postmedial patch, the upper edge of the conjoined patches running obliquely from submedian fold towards base to vein 6 well beyond middle, their lower and outer edges defined by a whitish line, the apex of the antemedial patch at middle of vein 1 where it is acutely produced, the apex of the postmedial patch extending to submedian

fold and rounded; an oblique blackish shade beyond the postmedial patch from apex to tornus; cilia black-brown. Hind wing grey suffused with brown, the terminal area tinged with fuscous to vein 3. Underside of both wings grey suffused with brown; fore wing with curved dark postmedial shade and oblique shade from apex to vein 3; hind wing with curved postmedial shade and faint oblique subterminal shade from costa to vein 2.

Hab. S. Nigeria, Lagos (*Boag*), 1 ♂; Gaboon, Ogové R., 1 ♂ cotype; Uganda, Entebbe (*Minchin*), 1 ♀. *Exp.* 50 millim.

7802. Parachalciope longiplaga, n. sp. (Plate CCXXII. fig. 21.)

♂. Head, thorax, and abdomen ochreous tinged with brown; fore tibiæ and the mid tibiæ and tarsi fuscous above. Fore wing ochreous tinged with red-brown and irrorated with blackish; a minute black discoidal spot; an oblique black wedge-shaped patch defined by white from submedian fold near base to vein 6 towards apex, its lower edge sinuous, its outer edge oblique; an oblique fuscous streak from apex to the apex of the wedge-shaped patch; a slight fuscous subterminal shade; a terminal series of black points. Hind wing pale ochreous tinged with brown, the terminal area suffused with fuscous brown; a terminal series of blackish points; cilia pale brownish ochreous; the underside pale ochreous irrorated with brown, a small black discoidal spot and terminal series of black points.

Hab. Uganda, Kafu R. (*Neave*), 1 ♂ type. *Exp.* 46 millim.

Sect. II. Hind tibiæ of male smoothly scaled.

A. Fore wing with ante- and postmedial triangular black patches.
  a. Fore wing with the ante- and postmedial black patches long.
    a^1. Fore wing with the antemedial black patch extending into the cell.
      a^2. Fore wing with the postmedial black patch rounded below ... . *benitensis.*
      b^2. Fore wing with the postmedial black patch triangular ..... *trigonometrica.*
    b^1. Fore wing with the antemedial black patch not extending into the cell, the postmedial patch triangular ..... *mahura.*
  b. Fore wing with the ante- and postmedial black patches small..... *monoplaneta.*
B. Fore wing without ante- and postmedial black patches. *agonia.*

7803. Parachalciope benitensis.

Grammodes benitensis, Holl. Psyche, vii. p. 85, pl. ii. f. 25 (1894).

Head, thorax, and abdomen grey-brown, the tegulæ and patagia with black stripes on upper edge; palpi with the 3rd joint black; fore and mid legs black in front. Fore wing with the costal area

grey irrorated with fuscous, some brownish ochreous below it, the inner and postmedial areas rufous, the terminal area grey suffused with fuscous; a large triangular black antemedial patch defined by yellowish white lines and separated by a narrow oblique yellowish white medial band from a large conical black postmedial patch defined on outer side and below by a yellowish white line, these markings extending from below subcostal nervure and vein 6 to submedian fold; the postmedial rufous area with black points on its inner and outer edges; an oblique black shade from apex; a fine waved black terminal line; cilia grey-brown. Hind wing

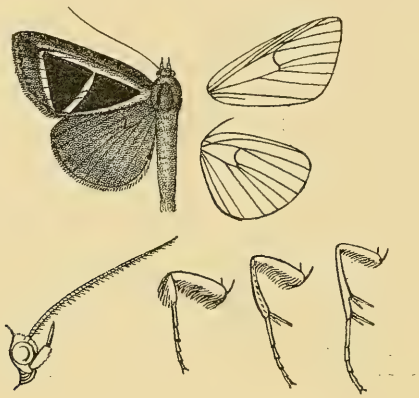


Fig. 9.—*Parachalciope benitensis* ♂. ½.

grey-brown, the terminal area suffused with fuscous; cilia brown, pale at tips. Underside of both wings grey-brown, the terminal areas fuscous.

Hab. Sierra Leone (*Clements*), 1 ♀; S. Nigeria, Old Calabar (*Kingsley*, *Crompton*), 1 ♂, 2 ♀, Sapele (*Sampson*), 2 ♂; Ilesha (*Humfrey*), 1 ♂; N. Nigeria, Minna (*Macfie*), 1 ♂, Bauchi Prov., Kabwir (*Fox*), 1 ♀; Cameroons (*Rutherford*), 1 ♂; Gaboon, Benita; N.E. Rhodesia, Kulungwisi (*Neave*), 1 ♂. *Exp.* 34–44 millim.

7804. **Parachalciope trigonometrica**, n. sp.
(Plate CCXXII. fig. 22.)

♂. Head and thorax grey tinged with brown and mixed with fuscous; palpi and frons black; legs blackish; abdomen grey suffused with fuscous brown, the ventral surface paler. Fore wing with the costal area pale brownish grey, the costa suffused with black to beyond middle and with some black irroration below it; a large triangular black patch between the cell and vein 1 from

near base to beyond middle, its apex extending just into the cell, separated by an oblique whitish band from a triangular black patch beyond the cell, its base resting on the discal fold and vein 6 and its acute apex below the submedian fold, defined on outer side by a white line; the inner area and the postmedial area below vein 6 rufous; an oblique black shade from apex diffused below, then a subterminal series of minute black spots with a rather diffused waved blackish line beyond them; the termen grey with slight blackish streaks in the interspaces; a fine waved black terminal line; cilia pale brownish with a slight dark shade at middle and whitish tips. Hind wing pale reddish brown; a fuscous terminal shade, broad at apex, narrowing to a point at termen at submedian fold and leaving some grey-brown on middle of termen; a fine dark terminal line; cilia brownish grey, fuscous at apex. Underside of both wings fuscous grey, the terminal areas fuscous with a paler band before them.

Hab. Br. E. Africa, Ravirondo, Up. Nzoia R. (*Neave*), 1 ♂ type. *Exp.* 48 millim.

7805. **Parachalciope mahura.**

Chalciope mahura, Feld. Reis. Nov. pl. 117. f. 13 (1874)
Chalciope ditrigona, Hmpsn. P. Z. S. 1910, p. 424, pl. xxxvii. f. 5.

Head, thorax, and abdomen brownish ochreous mixed with some fuscous. Fore wing greyish ochreous tinged with red-brown and irrorated with fuscous; a velvety black triangular mark defined by silvery white, its angles on vein 1 near base and beyond middle and its apex on median nervure; another velvety black triangular patch defined by silvery white on postmedial area, its angles on discocellulars, at vein 7 below apex and above vein 1 towards tornus; two brown subterminal lines bent outwards to apex; a terminal series of black points; cilia whitish with a fuscous line near base. Hind wing grey suffused with brown; a fuscous subterminal shade from apex to vein 2; a terminal series of black points; cilia whitish with a fuscous line from apex to vein 2; the underside white tinged with brown and irrorated with fuscous except on inner area, a faint curved pale postmedial shade from costa to vein 2.

Hab. Br. E. Africa, Kilima'njaro, Taveta Forest (*Hannington*), 1 ♂; Br. C. Africa, Zomba (*Johnston*), 1 ♂; N.E. Rhodesia, E. Luangwa Distr., Petauke (*Neave*), 1 ♂ type *ditrigona*; Natal, Durban, type † ♀ in Coll. Rothschild. *Exp.* 42 millim.

7806. **Parachalciope monoplaneta**, n. sp.
(Plate CCXXII. fig. 23.)

♀. Head, thorax, and abdomen pale brownish ochreous; antennæ, 3rd joint of palpi, and legs rather browner. Fore wing pale ochreous tinged with brown; a small oblique triangular antemedial

patch, its upper angles produced and resting on the submedian fold and median nervure near origin of vein 3; a similar but not oblique patch on vein 4 just beyond the cell, its outer angle extending to just above vein 4, where it is joined by an oblique blackish streak from apex with a brownish shade beyond it extending to inner margin; a series of black points just before termen. Hind wing ochreous white with a faint fuscous subterminal shade; the underside ochreous white slightly irrorated with brown.

Hab. Uganda, Toro, Mpanga Forest (*Neave*), 3 ♀ type. *Exp.* 42–46 millim.

7807. **Parachalciope agonia**, n. sp. (Plate CCXXII. fig. 24.)

Head, thorax, and abdomen pale ochreous tinged with red-brown and irrorated with fuscous; tarsi fuscous with pale rings. Fore wing pale ochreous tinged with red-brown and irrorated with fuscous; a minute blackish discoidal spot; a diffused oblique blackish brown streak from apex to vein 5 with a faint curved shade from it to inner margin; a faint diffused waved subterminal line, incurved below vein 4; a series of black points just before termen. Hind wing pale ochreous tinged with brown; a diffused fuscous subterminal shade, darker towards apex; a terminal series of black points; the underside pale ochreous slightly irrorated with brown and tinged with rufous towards base.

Hab. Uganda, Entebbe (*Neave*), 1 ♂ type, Toro, Mpanga Forest (*Neave*), 1 ♀. *Exp.* ♂ 54, ♀ 50 millim.

Genus **EUCLIDISEMA**, nov.

Type, *E. mygdon*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd moderate; frons smooth with tuft of hair above; eyes large, round; antennæ of male minutely ciliated; thorax clothed with scales and hair mixed and without crests; tibiæ of male fringed with long hair, the mid tibiæ dilated with a groove containing a tuft of long hair, of female moderately fringed with hair, the fore and hind tibiæ not spined; abdomen smoothly scaled and without crests. Fore wing with the apex rounded, the termen evenly curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about one-third length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the antemedial band erect ..... *erecta.*
B. Fore wing with the antemedial band oblique.
  a. Fore wing with the antemedial band arising below the costa well beyond the base.
    *a*¹. Fore wing with the outer edge of the postmedial black patch strongly excised at middle, then strongly excurved ..... *bisinuata.*
    *b*¹. Fore wing with the outer edge of the postmedial black patch slightly excised at middle, then slightly excurved. *imminua.*

c^1. Fore wing with the outer edge of the postmedial black patch evenly curved ..... *mygdon.*

b. Fore wing with the antemedial band arising below the costa close to the base.

a^1. Fore wing with the outer edge of the postmedial black patch inwardly oblique ..... *alcyona.*

b^1. Fore wing with the outer edge of the postmedial black patch erect and slightly excised at middle..... *emathion.*

c^1. Fore wing with the outer edge of the postmedial black patch outwardly oblique ..... *delta.*

7808. **Euclidisema erecta.** (Plate CCXXII. fig. 25.)

Chalciope erecta, Hmpsn. Ann. S. Afr. Mus. ii. p. 333 (1902).

♀. Head and tegulæ grey-brown; thorax blackish brown; antennæ with the shaft white in front; pectus, legs, and abdomen grey-brown. Fore wing black-brown to the postmedial line except on costal area, the rest of wing grey-brown; a very narrow erect white antemedial band from below costa to inner margin; postmedial line double, brown filled in with whitish, oblique from costa to below vein 6 where it is angled outwards, then obliquely incurved, two white points beyond it on costa; an oblique black-brown shade from apex diffused on inner side and bent inwards above vein 6 to near the angle of the postmedial line; a fine waved dark terminal line with points at the interspaces, and fine whitish line at base of cilia. Hind wing fuscous brown, the cilia paler; the underside grey-brown with small discoidal spot, curved postmedial line and terminal series of points.

Hab. Natal, Northdene, 1 ♀ type. *Exp.* 36 millim.

*7809. **Euclidisema bisinuata.**

Grammodes bisinuata, Snell. Tijd. v. Ent. xxiii. p. 104, pl. 8. f. 3 (1880).

♀. Head and tegulæ grey-brown; thorax black-brown; abdomen grey-brown. Fore wing grey-brown with a reddish tinge; the basal area black-brown except at costa; an oblique white band from below costa before middle to above middle of inner margin where it forks slightly, a large black-brown patch beyond it from below costa to just above inner margin defined by slight whitish lines, its outer edge produced to a point at vein 6 where it is met by a curved dark streak from apex, then strongly excised and again strongly excurved on inner area. Hind wing reddish brown.

Hab. Celebes, Makassar, Saleyer, Takalar. *Exp.* 32 millim. This species is unknown to me.

*7810. **Euclidisema imminua.**

Grammodes imminua, Snell. Tijd. v. Ent. xlv. p. 91, pl. 8. f. 4 (1902).

♀. Head and thorax black-brown; abdomen grey-brown. Fore wing grey-brown; the basal area black-brown except towards costa; a rather broad oblique white band from below costa before middle

to middle of inner margin, a large black-brown patch beyond it defined by white lines, its outer edge produced to a point at vein 6, then slightly excised and again slightly excurved below vein 2; an oblique dark shade from apex to the angle of the postmedial patch, defined on outer side by the whitish subterminal line which is slightly waved below vein 6; a fine dark terminal line and whitish line at base of cilia. Hind wing grey-brown.

Hab. Wetter. *Exp.* 32 millim. This species is unknown to me.

7811. Euclidisema mygdon.

Noctua mygdon, Cram. Pap. Exot. ii. p. 94, pl. 156. f. G (1777); Moore, Lep. Ceyl. iii. p. 180; Hmpsn. Moths Ind. ii. p. 531.
Noctua triangulum, Fabr. Mant. ii. p. 145 (1787).
Chalciope mygdonias, Hübn. Verz. p. 268 (1827).

Head and thorax reddish brown; pectus, legs, and abdomen pale red-brown. Fore wing dark chocolate-brown, the costal and terminal areas grey-brown, the costal edge whitish towards base; a narrow oblique white band from subcostal nervure before middle to inner margin towards tornus; the upper edge of the dark area on postmedial area and its outer edge defined by white lines; a triangular blackish patch on apical part of costa, its outer edge

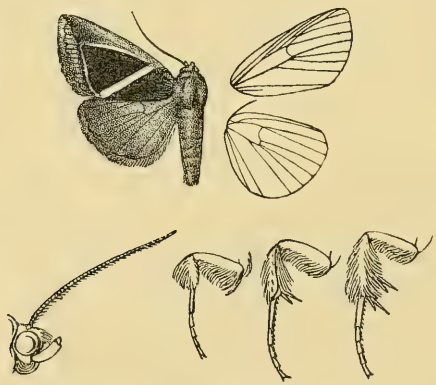


Fig. 10.—*Euclidisema mygdon*, ♂. ½.

oblique, a whitish subterminal shade from it to tornus; a fine waved dark terminal line with black points at the interspaces; cilia red-brown. Hind wing fuscous brown; a waved dark terminal line with some grey-white before it towards tornus; cilia grey-white below apex and towards tornus; the underside whitish, the costal and terminal areas suffused and irrorated with brown.

Hab. Loo-choo Is. (*Pryer*), 2 ♂; Formosa, Takow (*Hobson*), 1 ♂, 1 ♀; Hongkong (*J. J. Walker*), 2 ♂; Centr. China, Kiukiang (*Pratt*), 1 ♂; Punjab (*Horne*), 1 ♂, 1 ♀, Kulu

(*Hocking*), 1 ♂, Jubbulpur (*F. Butler*), 1 ♀, Fattehpur (*Betton*), 1 ♀, Manpuri, 2 ♀; Sikhim, 1 ♀; Assam (*Badgley*), 1 ♂; Bengal, Calcutta 1 ♂; Madras, Nilgiris (*Hampson*), 2 ♂, Coimbatore (*Walhouse*), 1 ♂; Ceylon (*Templeton*), 1 ♂, 1 ♀, Trincomali (*Yerbury*), 1 ♀; Burma, Moulmein (*Clerk*), 2 ♀, Rangoon (*Noble*), 1 ♂, 1 ♀, Hsipaw (*de Nicéville*), 1 ♀; Andamans (*Rogers*), 3 ♂; Nicobars (*Rogers*), 2 ♂, 1 ♀, Nancowry, 1 ♂, 1 ♀; Penang (*Ridley*), 1 ♂; Perak, Goping (*Künstler*), 1 ♂; Selangor (*Meade-Waldo*), 1 ♀; Singapore (*Ridley*), 5 ♀; Sumatra, Pulo-Weh Is. (*Meade-Waldo*), 1 ♀; Borneo, Sarawak (*Wallace*), 2 ♀, Mt. Marapok, 1 ♀; Java (*Horsfield*), 3 ♂, 2 ♀. *Exp.* 30–38 millim.

7812. **Euclidisema alcyona.** (Plate CCXXII. fig. 26.)

Grammodes alcyona, Druce, P. Z. S. 1888, p. 225, pl. xiii. f. 5.
Grammodes hoplitis, Meyr. Trans. Ent. Soc. 1902, p. 28.
Trigonodes isosceles, Warr. Nov. Zool. x. p. 123 (1903).

Head and tegulæ grey-brown, the thorax fuscous brown; antennæ with the basal half of shaft in front white; pectus, legs, and abdomen pale grey-brown. Fore wing deep chocolate-brown, the costal area grey irrorated with brown, the terminal area violaceous white; an oblique white fascia from subcostal nervure near base to vein 1 towards tornus; the dark area defined above except towards base and on outer side by white; an oblique blackish streak from apex, diffused on inner side and followed by a narrow rufous band beyond the white line defining the dark area; a fine waved brown terminal line with black points at the interspaces; cilia dark reddish brown. Hind wing dull reddish brown; a fine waved dark terminal line with some grey-white before it towards tornus; cilia whitish towards tornus; the underside whitish, the costal and terminal areas broadly suffused with reddish brown, a small brown spot on upper discocellular.

Hab. Br. N. Guinea, Port Moresby, 1 ♀; Queensland, 1 ♀; Fiji (*Mathew*), 1 ♂, 1 ♀. *Exp.* 32–36 millim.

*7813. **Euclidisema emathion.**

Grammodes emathion, Snell. Tijd. v. Ent. xlv. p. 90, pl. 8. f. 5 (1902).

Head and thorax black-brown; abdomen grey-brown. Fore wing grey-brown; a white fascia from below costa close to base to above inner margin beyond middle, its extremities pointed, the area below it black-brown; a large triangular black-brown patch above the white fascia defined by white lines, its outer edge erect and slightly excised at middle; an oblique black-brown shade from apex to vein 6, diffused on inner side; a faint whitish subterminal line; a fine black terminal line. Hind wing grey-brown.

Hab. Celebes, Bonthain, Menado. *Exp.* 36 millim. This species is unknown to me.

7814. Euclidisema delta.

Ophiusa delta, Boisd. Faun. Ent. Mad., Lép. p. 105, pl. 13. f. 1 (1833).
Grammodes crestonion, Snell. Tijd. v. Ent. xlv. p. 90, pl. 8. f. 3 (1902).

Head and thorax reddish-brown, the head with some whitish above frons and behind; legs and abdomen grey-brown; pectus and ventral surface of abdomen whitish tinged with brown. Fore wing deep chocolate-brown, the costal area grey tinged with brown except at apex; an oblique white fascia from base of subcostal nervure to vein 1 just before tornus; the dark area defined above except towards base and on outer side by strong white lines; a dark terminal line slightly defined on inner side by grey from below apex to tornus; cilia grey with a fine white line at base. Hind wing dull reddish brown, a dark terminal line; cilia whitish, brown at apex, then with brown line near base; the underside whitish, the costal and terminal areas broadly suffused with red-brown, a small brown spot on upper discocellular.

Hab. Zanzibar (*de la Garde*), 1 ♂; Br. E. Africa, Taveta (*Rogers*), 1 ♀, Tanga (*Hollis*), 1 ♂; Mashonaland, (*Dobbie*), 1 ♂; Bechuanaland, Lake N'Gami (*Lugard*), 1 ♂; Transvaal (*Pead*), 1 ♀; Cape Colony, Plettenburg Bay, 1 ♀; Madagascar (*Kitching*), 1 ♂; Aldabra (*Meade-Waldo*), 1 ♂; Amirantes, D'Arros I. (*B. Fletcher*), 1 ♀; Mauritius; Celebes, Menado. *Exp.* 30–38 millim.

Genus **LEUCOMELAS**, nov.

Type, *L. juvenilis*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd moderate; frons smooth, with tuft of hair above; eyes rather small and elliptical; antennæ of male minutely ciliated; thorax clothed with scales and hair mixed and without crests; tibiæ slightly fringed with hair, the fore tibiæ not spined, the hind tibiæ strongly spined; abdomen smoothly scaled and without crests. Fore wing short and broad, the apex rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about one-third length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

7815. Leucomelas juvenilis.

Agnomonia juvenilis, Brem. Lep. Ost-Sib. p. 61, pl. 5. f. 18 (1864); Staud. Cat. Lep. pal. p. 242.

Head, thorax, and abdomen black-brown slightly mixed with grey; antennæ with the shaft white above towards base; palpi and legs strongly irrorated with white; pectus and ventral surface of abdomen grey-white. Fore wing black-brown; a creamy-white band from costa beyond middle to tornus, its outer edge angled outwards at vein 6, then narrowing to tornus, the costal edge

white for a short distance on each side of the band; a minute white streak on costa towards apex; cilia white at tips from apex to below vein 5 and from submedian fold to tornus. Hind wing black-brown; an oblique creamy white band from vein 6 well beyond middle to termen at vein 1, interrupted by slight dark

Fig. 11.—*Leucomelas juvenilis*, ♂. $\frac{1}{1}$.

streaks on the veins; cilia white at tips from apex to below vein 5. Underside of fore wing with the band rather broader and with irregular edges; hind wing with the inner area slightly irrorated with white.

Hab. E. Siberia, Amurland, 2 ♂, 4 ♀, Zeller & Leech Colls., Ussuri. *Exp.* 38–44 millim.

Genus **EUCLIDIMERA**, nov.*

Type, *E. mi.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and fringed with long hair in front, the 3rd moderate; frons smooth; eyes rather small and elliptical; antennæ of male ciliated; thorax clothed with hair and scales mixed and without crests; tibiæ slightly fringed with hair, all the tibiæ strongly spined; abdomen smoothly scaled and without crests. Fore wing short and broad, the apex rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole, 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

---

* *Euclidia*, Treit. (1826) type *fixa* should take precedence over *Synthymia*, Vol. ix. p. 372.

A. Hind wing not blue-white.
  a. Hind wing without subterminal series of small black spots.
    a^1. Fore wing with the markings clearly defined by ochreous or white.
      a^2. Hind wing with ochreous white or yellow maculate postmedial and subterminal bands ..... *mi*.
      b^2. Hind wing with the postmedial and subterminal bands not maculate ..... *annexa*.
    b^1. Fore wing with the white markings reduced to the postmedial line and slight spots; hind wing with the white confined to the inner area ..... *futilis*.
  b. Hind wing with subterminal series of small black spots ..... *regia*.
B. Hind wing blue-white..... ..... *cærulea*.

7816. Euclidimera mi.

Phalæna mi, Clerck, Icones, pl. 9. f. 5 (1759); Linn. Syst. Nat. ed. xii. p. 838 (1767); Esp. Schmett. iv. pl. 89. ff. 3, 4; Hübn. Eur. Schmett., Noct. f. 346; Godt. Lép. Fr. v. p. 98, pl. 52. ff. 3-5; Steph. Ill. Brit. Ent., Haust. iii. p. 139; Staud. Cat. Lep. pal. p. 240.
Phalæna litterata, Cyr. Ent. Nap. i. p. 2, pl. 1. f. 9 (1787).
Euclidia explanata, Rebel, Verh. zool.-bot. Ges. Wien, lviii. p. (271) (1908).
Euclidia extrema, Bang-Haas, Iris, xxvi. p. 162 (1912).

♂. Head and thorax black-brown mixed with greyish; palpi, pectus, and legs ochreous white mixed with brown; abdomen black-brown with whitish segmental lines, the ventral surface ochreous white. Fore wing red-brown mixed with ochreous; an elliptical black spot defined by ochreous just above inner margin before middle; an oblique ochreous line defined on outer side by

Fig. 12.—*Euclidimera mi*, ♂. ¾.

dark brown from costa before middle, below which it is slightly incurved, to just above middle of inner margin, then curved round upwards and incurved to lower angle of cell, then defined on inner side by dark brown and running downwards to submedian fold, then

up to the costa beyond middle with a strong outward curve beyond the cell; orbicular black-brown with some ochreous suffusion beyond it; reniform dark brown with an ochreous bar on its outer edge; subterminal line ochreous defined on inner side by wedge-shaped black-brown marks from below costa to submedian fold except at middle where it is strongly incurved, an ochreous shade or line just beyond it from vein 7 to submedian fold; cilia dark brown at base, chequered ochreous and brown at tips. Hind wing dark brown, mixed with ochreous on basal half; a round ochreous spot beyond the discocellulars; a maculate ochreous postmedial band, excurved at discal fold, incurved beyond lower angle of cell, then again excurved; a subterminal series of eight ochreous spots, excurved at middle and angled inwards between veins 4, 3; cilia brown at base, the tips ochreous, chequered with brown from apex to vein 2. Underside of fore wing ochreous, the costa irrorated with brown, orbicular and reniform black, a black-brown postmedial line angled outwards at discal fold, then incurved and ending at submedian fold, a subterminal band interrupted between veins 4, 3 and excurved above that point, the veins of terminal area streaked with black-brown, a terminal band expanding at middle; hind wing ochreous, the base irrorated with black-brown, a black discoidal lunule, postmedial line angled outwards at discal fold, excurved below vein 2 and ending at submedian fold, a subterminal line diffused on inner side, incurved below costa, interrupted between veins 4, 3, excurved above and below that point and ending on termen at vein 1, a terminal line expanding at apex and between veins 4, 3.

♀. The markings whiter; fore wing with the antemedial line not incurved below costa.

Ab. 1. *litterata*. Fore wing with more white especially beyond the postmedial line; hind wing much whiter.

Ab. 2. *explanata*. Fore and hind wings with the markings clear whitish yellow.—Bohemia.

Ab. 3. Hind wing orange-yellow with the markings black.—Portugal.

Hab. Britain, Leech Coll.; France, Sand Coll.; Germany, Zeller, Frey, & Leech Colls.; Austria; Hungary; Switzerland, Frey Coll.; Spain; Portugal (*Eaton*); Italy; Russia, Livonia, Zeller Coll., Sarepta, Leech Coll.; Armenia; Asia Minor, Bithynia, ? Pontus; Syria, 1 ♀, Leech Coll.; W. Turkestan, Issyk-kul, Ala Tau; W. Siberia, Altai; E. Turkestan, Ili; E. Siberia, Amurland, 4 ♀, Ussuri. *Exp.* 32–36 millim.

Larva. Meyr. Brit. Lep. p. 163; Barrett, Lep. Brit. vi. p. 274, pl. 255. f. 2; Hffm. Raup. p. 145, pl. 36. f. 20.

Pale ochreous or yellow; dorsal and lateral lines double, pale brown or fuscous; subdorsal and supraspiracular lines darker brown; spiracular line pale edged with darker brown; head pale pinkish ochreous. Food-plants: *Trifolium*, *Medicago*, and *Melilotus*. 7–9.

7817. Euclidimera annexa. (Plate CCXXIII. fig. 1.)

Euclidia annexa, H. Edw. Ent. Am. vi. p. 115 (1890); Smith, Cat. Noct. N. Am. p. 319.
Drasteria conspicua, Smith, Can. Ent. xxxii. p. 224, pl. v. ff. 13, 14 (1900).

Head, thorax, and abdomen white mixed with dark brown. Fore wing grey-white thickly irrorated with dark brown; subbasal line slight, double, brown filled in with whitish, from costa to submedian fold; antemedial line oblique from costa to middle of inner margin, slightly sinuous, dark brown defined on inner side by whitish; a small black spot in middle of cell and diffused brown discoidal mark defined on outer side by whitish; a dark brown band beyond the cell from costa to submedian fold edged by the dark postmedial line defined on outer side by whitish, excurved below costa and at submedian fold retracted to lower angle of cell, then curved inwards to near the antemedial line and obliquely excurved to inner margin, with dark suffusion between it and the antemedial line below the cell; a brown subterminal shade with blackish spots on it above and below vein 7, the lower slightly angled outwards; the termen dark brown with a series of blackish points. Hind wing yellowish white sparsely irrorated with dark brown and with diffused brown fasciæ along median nervure and on inner area to the postmedial line, which is strong, black-brown, incurved beyond lower angle of cell; a black discoidal lunule; a black-brown subterminal band and a narrow terminal band; cilia yellowish white suffused with brown at base; the underside yellowish white sparsely irrorated with black, a black discoidal lunule, postmedial line oblique to discal fold and incurved beyond lower angle of cell, subterminal and terminal bands narrow.

Hab. Canada, Alberta, Pine Creek (*Wolley-Dod*), 1 ♂, 1 ♀, Banff (*Mrs. Nicholl*), 1 ♀; Br. Columbia, Up. Keremeos (*Mrs. Nicholl*), 1 ♀; U.S.A., Oregon, The Dalles, 3 ♂, 2 ♀ type. *Exp.* 32–34 millim.

*7818. Euclidimera futilis.

Euclidia futilis, Staud. Iris, x, p. 341, pl. 9. f. 28 (1897); id. Cat. Lep. pal. p. 240.

♂. Head and thorax dark brown mixed with some grey; abdomen dark brown with segmental white rings. Fore wing dark brown; two slight grey-white marks at base of inner margin; antemedial line indistinct, greyish, oblique, sinuous; a small rather elongate white discoidal spot; postmedial line whitish, oblique towards costa, angled outwards at discal and submedian folds and incurved between them; subterminal line indistinct, greyish, incurved at middle; cilia white. Hind wing dark brown, the inner area suffused with white; cilia white.

Hab. E. Siberia, Apfel Mts. *Exp.* 28 millim. This species is unknown to me.

7819. Euclidimera regia.

Euclidia regia, Staud. Stett. Ent. Zeit. 1888, p. 48; Alph. Rom. Mém. v. p. 185, pl. 8. f. 1; Staud. Cat. Lep. pal. p. 240.

♂. Head, thorax, and abdomen black-brown mixed with white, the ventral surface of abdomen whiter. Fore wing deep red-brown; some diffused white on basal costal area and a streak on base of inner margin; a narrow very oblique white band irrorated with blackish from costa before middle to middle of inner margin, angled at vein 1; orbicular a small elongate black spot; reniform creamy-white with black lunule in centre, confluent with a white patch on costa; postmedial line creamy white, diffused at costa, oblique to vein 6, and at submedian fold emitting an oblique streak below vein 2 to below end of cell; subterminal line creamy white, emitting streaks on its inner side on veins 7 to 2, those on veins 6 to 2 connected with the postmedial line and leaving spots of the ground colour in the interspaces, ending at tornus; cilia dark brown at base, creamy white at tips, chequered with brown at veins 4, 3. Hind wing orange-yellow; the basal inner area suffused with black-brown with irregular outer edge; a small black discoidal spot; postmedial line black-brown, incurved at discal fold and excurved above and below that point; a subterminal series of small black spots with wedge-shaped mark at tornus; a terminal black-brown band except towards tornus; cilia black-brown at base, yellow at tips. Underside orange-yellow; fore wing with the orbicular and reniform black, the former with black irroration above and below it, a narrow black postmedial band angled outwards at discal fold and ending at submedian fold, a subterminal bar from costa to vein 6, a series of wedge-shaped brown patches in the interspaces of terminal area; hind wing with slight antemedial band of black irroration from costa to submedian fold, black discoidal lunule, postmedial line angled outwards at discal fold, excurved at vein 2 and bent inwards to inner margin, subterminal series of small spots, and series of brown spots on termen and cilia at the veins.

Hab. W. Turkestan, Turcomania, 1 ♂, Ferghana, ? Pamirs. *Exp.* 26 millim.

7820. Euclidimera cærulea. (Plate CCXXIII. fig. 2.)

Drasteria cærulea, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 155 (1873); Smith, Cat. Noct. N. Am. p. 318.
Euclidia aquamarina, Feld. Reis. Nov. pl. 117. f. 10 (1874).
Drasteria livida, Letcher, Ent. News Philad. vii. p. 223 (1896).

(*aquamarina*). Head and thorax blue-white mixed with brown; antennæ brown; abdomen blue-white mixed with some blackish. Fore wing blue-white irrorated with brown, the terminal area suffused with brown, narrowing to tornus; subbasal line slight, brown, curved, from costa to vein 1; antemedial line reddish brown, oblique, slightly sinuous; a diffused brownish bar from middle of costa; a black point in middle of cell; reniform slightly defined by brown, large; postmedial line fine, brown, oblique to vein 6, angled

inwards at discal fold to the reniform, then running down to vein 2, where it is sharply retracted to the lower edge of the reniform and oblique to inner margin; a subterminal chocolate-brown mark on costa with black spots below it above and below vein 7, followed by a faint slightly waved line to inner margin; a faint waved brown terminal line; cilia brown, concolorous with the brown terminal area. Hind wing bluish white, the basal half irrorated with fuscous; a faint dark postmedial line, incurved from below costa to submedian fold where it is angled outwards; a strong blackish terminal line; cilia white; the underside white sparsely irrorated with black.

Ab. 1. *cærulea*. Fore wing with the antemedial brown line diffused on outer side, not reaching inner margin but curved outwards to join the postmedial line to which it is more closely approximated on inner area, a red-brown band beyond the cell before the postmedial line; hind wing with narrow dark subterminal band slightly excurved at vein 6.

Hab. VANCOUVER I. (*Lyall, J. J. Walker*), 2 ♂, 1 ♀, Duncans (*Livingston*), 2 ♂, Galliano I. (*Stephenson*), 1 ♂, 1 ♀; U.S.A., Washington, 1 ♂, California, 3 ♂, 1 ♀ type, Sierra Nevada, 2 ♀, Mendocino Co., Rancherie Creek (*Walsingham*), 4 ♂, 2 ♀. *Exp.* 36–40 millim.

Genus **GONOSPILEIA**.

	Type.
Gonospileia, Hübn. Verz. p. 281 (1827)	*munita*.
Euclidia, Hübn. Teut. ined.	*glyphica*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching about to vertex of head and moderately scaled, the 3rd moderate; frons smooth with slight tuft of hair above; eyes rather small and elliptical; antennæ of male ciliated; thorax clothed with hair and scales mixed and without crests; tibiæ slightly fringed with hair, the fore tibiæ not spined, the hind tibiæ spined between the mid and hind spurs only; abdomen smoothly scaled and without crests. Fore wing with the apex rounded, the termen evenly curved and hardly crenulate; veins 3 and 5 from near angle of cell: 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Hind wing with the basal and inner areas dark brown.
  a. Hind wing with the terminal half reddish brown ..... *cuspidea*.
  b. Hind wing with the terminal half yellow with dark subterminal band.
    a^1. Fore wing with prominent acute triangular dark brown mark beyond the reniform before the postmedial line ... *dentata*.
    b^1. Fore wing with faint and not acute triangular shade beyond the reniform before the postmedial line ..... *glyphica*.
B. Hind wing with the basal and inner areas orange slightly tinged with brown ..... *triquetra*.
C. Hind wing fulvous red ..... *munita*.

7821. Gonospileia cuspidea. (Plate CCXXIII. fig. 3.)

Drasteria cuspidea, Hübn. Zutr. ex. Schmett. i. p. 16, ff. 69–70 (1818); Smith, Cat. Noct. N. Am. p. 319.

Head, thorax, and abdomen dark chocolate-brown suffused with grey. Fore wing dark chocolate-brown suffused with grey; a round black spot just above inner margin before the antemedial deep chocolate-brown band, its inner edge strongly incurved above vein 1 over the black spot, its outer edge obliquely excurved; an indistinct sinuous medial line with an oblique elliptical brown annulus beyond it in and below angle of cell cutting into the lower edge of the indistinct elliptical greyish reniform which has a triangular deep, chocolate-brown patch beyond it; postmedial line chocolate-brown with a pale grey patch before it below the costa and slightly defined on outer side by pale grey, bent outwards below costa, incurved below vein 6 and slightly excurved at submedian fold; a chocolate-brown patch beyond it from costa to vein 6 with some pale points at costa, its outer edge defined by black and acutely angled outwards above vein 6; a very faint waved grey subterminal line from vein 6 to inner margin with a series of small blackish spots beyond it followed by a pale grey shade; the terminal area suffused with red-brown; a fine waved brown terminal line; cilia red-brown mixed with some grey. Hind wing with the basal half dark brown, the terminal half cupreous reddish brown; the dark area defined by a sinuous dark line from middle of costa to tornus; a narrow dark brown subterminal band with somewhat dentate outer edge; the termen suffused with brown from apex to vein 3; a waved dark brown terminal line; cilia red-brown mixed with some grey. Underside of both wings with the basal half dark brown, the terminal half pale red-brown, irrorated with brown; fore wing with the dark area extending to the subterminal line except towards costa.

Hind tibiæ sometimes with one or two spines above the medial spurs.

Hab. Arctic America, Slave R. (*Taylor*), 1 ♂; Canada, Ottawa (*Mrs. Nicholl*), 1 ♂, Br. Columbia, Mabel Lake (*Brooks*), 1 ♂, Pentecton (*Mrs. Nicholl*), 1 ♂, 1 ♀, Greenwood (*Mrs. Nicholl*), 1 ♀, Lr. Kootenay, Nelson (*Mrs. Nicholl*), 4 ♀, Okanagan R., Up. Keremeos (*Mrs. Nicholl*), 2 ♂, 1 ♀; Vancouver I., Corvichan Bay (*Livingston*), 1 ♂, Ladysmith (*Livingston*), 1 ♀; U.S.A., Northern, Eastern, Middle, and Central States, New York (*Packard*), 2 ♂, 4 ♀, Kansas (*Snow*), 2 ♀, Texas, Dallas (*Boll*), 1 ♂, California (*Walsingham*), 2 ♂, 2 ♀, Knights Valley, 1 ♀, Hanlah, 1 ♀. *Exp.* 30–42 millim.

Egg. Lembert, Can. Ent. xxvii. p. 107.

Pea-green with deep vertical lines.

Larva. 1st stage. A slender looper; thoracic somites pale green, then dark green to the somites which carry the prolegs, of which there are two pairs, then pale green. Food-plant: clover.

7822. Gonospileia dentata.

Euclidia cuspidea, Ev. Bull. Mosc. 1857, iv. p. 436 (nec Hübn.).
Euclidia dentata, Staud. Cat. Lep. Eur. ed. ii. p. 135 (1871); id. Cat. Lep. pal. p. 240.
Euclidia consors, Butl. A. M. N. H. (5) i. p. 293 (1878); id. Ill. Het. B.M. ii. p. 42, pl. 34, f. 6.

Head and thorax bright rufous; pectus and legs fulvous yellow; abdomen yellow dorsally suffused with red-brown except towards extremity. Fore wing pale red-brown with a greyish tinge to beyond middle, the terminal area yellow slightly tinged with rufous leaving the termen red-brown from apex to vein 2; an oblique red-brown antemedial band, broadening to above vein 1 where its outer edge is angled outwards, then bent inwards to inner margin; an oblique brown medial line, sinuous below the cell; the outer part of medial area red-brown except a yellow patch before the postmedial line on costal area; reniform with faint pale annulus, elliptical, a triangular chocolate-brown patch beyond it; postmedial line indistinctly double, rufous filled in with yellow, excurved to vein 6, then defining the red-brown area, incurved to below vein 3, then excurved, some rufous suffusion beyond it from vein 4 to inner margin, a conical chocolate-brown patch beyond it from costa to vein 6, with two minute oblique pale striæ from costa and its outer edge excised; a waved red-brown terminal line; cilia red-brown. Hind wing with the basal and inner areas red-brown with a greyish tinge, defined by an oblique sinuous line from below costa to tornus, excurved beyond the cell and below vein 2; a narrow dark brown subterminal band, almost obsolete towards costa, incurved below costa, excurved at middle and ending on termen at vein 1; the termen suffused with rufous from apex to submedian fold; a waved red-brown terminal line; cilia rufous. Underside yellow tinged with rufous; fore wing with brown discoidal lunule, postmedial line angled outwards at discal fold, and incurved subterminal shade from costa to vein 6, the terminal area yellow except towards apex; hind wing with discoidal striga and red-brown subterminal shade excurved at costa and discal fold, then obsolescent and ending at submedian fold.

Hab. W. Siberia, Altai, 3 ♂, 2 ♀, Zeller Coll.; E. Siberia, Ussuri; Japan, Yezo (*Pryer*), 1 ♂, 1 ♀, Oiwaké (*Pryer*, *Leech*), 1 ♂, 1 ♀, Tokio (*Maries*), 2 ♀, Yokohama (*Jonas*), 2 ♀ type *consors*. *Exp.* 38–40 millim.

7823. Gonospileia glyphica.

Noctua glyphica, Linn. Syst. Nat. ed. x. p. 510 (1758); Esp. Schmett. iv. pl. 89. f. 2; Hübn. Eur. Schmett., Noct. p. 347; Godt. Lép. Fr. v. p. 96. pl. 52. f. 2; Steph. Ill. Brit. Ent., Haust. iii. p. 138; Curt. Brit. Ent. 659; Staud. Cat. Lep. pal. p. 240.
Euclidia tristicula, Schultz, Soc. Ent. xxii. p. 186 (1908).

Head and thorax dark red-brown; antennæ with the shaft whitish above towards base; abdomen black-brown; palpi, pectus, legs,

and ventral surface of abdomen grey mixed with brown. Fore wing grey tinged with red-brown and irrorated with black; an oblique red-brown antemedial band from costa to just above inner margin, its edges angled outwards at vein 1 and its inner edge incurved in submedian interspace; an oblique sinuous red-brown medial line, the reniform indicated by some dark brown defined by a greyish line on its outer side; postmedial line red-brown, excurved below costa, then incurved and excurved in submedian interspace, the area between it and the medial line suffused with red-brown except towards costa; a conical chocolate-brown patch on postmedial part of costa with two grey points on costa, its outer edge excised at middle, traces of a double sinuous subterminal line from the outer edge of the patch to inner margin; a red-brown terminal band ending in a point at submedian fold, and a fine dark terminal line. Hind wing yellow with the basal and inner areas black-brown; an oblique black line from vein 6 well beyond the cell to termen at vein 1, incurved below vein 5; a terminal red-brown band with waved inner edge, and dark terminal line from apex to submedian fold; cilia red-brown. Underside orange-yellow; fore wing with black discoidal spot, postmedial striga from costa, subterminal patch on costal area and terminal band from apex to vein 2; hind wing with black discoidal lunule, slight postmedial line angled outwards at discal fold and ending at vein 2, subterminal line forming patches at costa and discal fold where it is excurved, and ending at submedian fold, and terminal line.

Ab. 1. *tristicula*. Darker.

Hab. Britain, Leech Coll.; France, Sand and Leech Colls.; Germany, Zeller and Leech Colls.; Austria; Hungary; Switzerland, Zeller and Frey Colls.; Spain; Corsica, Zeller and Leech Colls.; Italy, Courmayeur (*Hampson*); Greece, Merlin Coll.; Balkan States; Norway, Frey Coll.; Russia, St. Petersburg, Zeller Coll.; Armenia; Asia Minor, Pontus, Bithynia; Syria, 2 ♀, Leech Coll.; W. Turkestan, ? Ferghana, Tarbagatai Mts.; W. Siberia, Altai; E. Siberia, Amurland, 2 ♂, 3 ♀, Ussuri. *Exp.* 26–34 millim.

Larva. Meyr. Brit. Lep. p. 164; Barrett, Lep. Brit. vi. p. 270, pl. 255. f. 3; Hffm. Raup. p. 145, pl. 36, f. 21.

Ochreous yellow, sometimes tinged with ferruginous at sides; dorsal line double, brown; subdorsal line double, dark grey; spiracular line yellow edged with dark grey: head brown marked with yellow. Food-plants: *Trifolium* and *Medicago*. 7–9.

7824. Gonospileia triquetra.

Noctua triquetra, Schiff. Wien. Verz. p. 94 (1776); Fabr. Mant. Ins. ii. p. 143 (1787); Hübn. Beitr. i. 3, p. 14, pl. 2, f. I. (1788); Esp. Schmett. iv. pl. 145. f. 4 (1789); Hübn. Eur. Schmett., Noct. f. 348; Godt. Lép. Fr. v. p. 94, pl. 52. f. 1.
Noctua fascialis, De Vill. Ent. Linn. ii. p. 450, pl. 6. f. 28 (1789).
Noctua fortificata, Fabr. Ent. Syst. iii. 2. p. 52 (1794).
Euclidia aurantiaca, Staud. Hor. Soc. Ent. Ross. xvi. p. 79 (1881).
Euclidia fumata, Hirschke, Verh. zool.-bot. Ges. Wien, lx. p. 414 (1910).

Head and thorax red-brown with a greyish tinge; palpi except at

tips, pectus, and legs rufous; abdomen grey irrorated with brown, the anal tuft yellow. Fore wing purplish grey irrorated with red-brown; a triangular chocolate-brown patch, edged with black and defined by white, from subcostal nervure before middle to above inner margin where its lower edge is excised; reniform pale red-brown defined on outer side by white, oblique elliptical, followed by a triangular deep chocolate-brown patch extending to the post-medial line; a slight incurved oblique line from lower angle of cell to inner margin followed by some pale red-brown, then deep chocolate-brown before the postmedial line, which is white defined on inner side by black except at costa and vein 6, obliquely curved from vein 6 to beyond lower angle of cell where it is strongly incurved, then strongly excurved, a reddish-brown band beyond it incurved and obsolescent below vein 6; the termen suffused with red-brown except towards apex and tornus; cilia reddish brown. Hind wing orange-yellow, the inner area irrorated with brown; a brown subterminal band, excurved at discal fold and ending on termen at vein 1; the termen suffused with red-brown from apex to submedian fold; cilia pale red-brown. Underside golden yellow; fore wing with the costa and apical area irrorated with brown, brown subterminal bars from costa and inner margin; hind wing irrorated with red-brown, traces of a curved postmedial line from costa to vein 2, the terminal shade faint.

Ab. 1. *aurantiaca*. Hind wing orange-red.—Pontus.

Ab. 2. *fumata*. Both wings thickly irrorated with fuscous obscuring the markings.

Hab. Austria, Zeller and Leech Colls.; Hungary, Frey and Leech Colls.; Balkan States; S. Russia; Armenia; Asia Minor, Pontus; W. Turkestan, Chwalynsk (*Christoph*), 1 ♂, Ala Tau; W. Siberia, Altai; E. Siberia. *Exp.* 28–32 millim.

Larva. Kirby, Butt. & Moths Eur. p. 278; Hffm. Raup. p. 145, pl. 36. f. 22.

Pale rusty yellow dotted with brownish, each somite with four black warts, two pairs of ventral prolegs. Food-plant: *Astragalus onobrychis*.

7825. Gonospileia munita.

Noctua munita, Hübn. Eur. Schmett., Noct. f. 593 (1818); Staud. Cat. Lep. pal. p. 241.
Euclidia angulosa, Ev. Nouv. Mém. Mosc. ii. p. 353, pl. 19. f. 7 (1832).
Euclidia immunita, Mill. Icones, ii. p. 406, pl. 92. f. 11 (1867).

Head and thorax pale rufous; antennæ with the shaft white above towards base; abdomen fulvous yellow. Fore wing pale rufous with slight dark irroration; a triangular chocolate-brown patch defined by white from just below costa before middle to above middle of inner margin, its lower outer angle produced to a point; the outer part of medial area bright rufous except towards costa, deeper towards the postmedial line where it is produced to an acute angle beyond the cell; postmedial line black defined on outer side by white, faintly towards costa, obliquely incurved below

vein 6 and excurved below vein 3, the area beyond it yellowish below vein 6, where it is joined by some yellowish from apex. Hind wing yellow tinged with rufous; a brown subterminal shade, excurved at discal fold and ending at tornus; the termen and cilia rufous. Underside of both wings yellow suffused with rufous.

Fig. 13.—*Gonospileia munita*, ♂. ½.

Ab. 1. *immunita*. Fore wing with the markings almost obsolete, without the triangular chocolate-brown patch before the antemedial line or the chocolate-brown before the postmedial line.

Ab. 2. Similar but both wings grey-brown tinged with red-brown.

Ab. 3. Wings grey-brown without red-brown tinge; fore wing with the black markings present.

Hab. Russia, Sarepta, Zeller, Frey, D'Emmich, Leech and Crowley Colls.; Armenia; W. Turkestan, Transcaspia, Buchara, Ferghana; E. Turkestan, Ili. *Exp.* 32–40 millim.

Genus **MEGISTOCLISMA**, nov.

Type, *M. ribbei*.

Proboscis fully developed; palpi with the 2nd joint obliquely upturned, reaching to above vertex of head and fringed with hair in front and behind, the 3rd porrect, long, slender, and somewhat dilated at extremity; frons smooth, with slight tuft of hair above; eyes large, round; antennæ of male minutely ciliated; thorax clothed with scales and hair mixed, and without crests; fore tibiæ and 1st joint of tarsus of male fringed with long hair, the mid and hind tibiæ smoothly scaled, the fore and hind tibiæ not spined; abdomen smoothly scaled and without crests. Fore wing with the costa highly arched towards apex which is rounded, the termen evenly curved and strongly crenulate; vein 3 from well before angle of cell; 5 from just above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the termen highly crenulate; the cell about one-third length of wing; vein 3 from just before angle; 4, 5 from angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only; the costal area in male sparsely clothed with very long fine hair on upperside.

7826. Megistoclisma ribbei.

Nyctipao ribbei, Pag. J.B. Nass. Ver. xxxix. p. 140, pl. x. f. 2 (1886).

♀. Head ochreous mixed with red-brown; tegulæ ochreous at base, red-brown at tips; thorax grey-brown with a blackish line behind the tegulæ; pectus and legs yellow, the fore legs suffused with red-brown in front; abdomen yellow with a black-brown band at base of dorsum and the two following segments suffused with grey-brown. Fore wing with the costal area grey-brown from inner margin near base to the postmedial line with some black

Fig. 14.—*Megistoclisma ribbei*, ♀. $\frac{2}{3}$.

suffusion along its very irregular lower edge and before the postmedial line, the inner area to the subterminal line and the apical area ochreous tinged with red-brown, the terminal area below vein 6 grey-brown with some dark striæ and patches of blackish suffusion; a curved subbasal black striga from costa defined on outer side by greyish and a black striga below the cell; a curved antemedial black striga from costa defined on inner side by greyish; antemedial line double, the inner line dark, the outer faint, arising at submedian fold from a tooth from the lower edge of costal area, sinuous to inner margin to which it is slightly bent outwards; a yellow line on outer edge of the tooth and along lower edge of the costal area

to a large semicircular black-brown discoidal spot which it defines except above; a rufous fascia beyond the cell below vein 6 to the subterminal line where it ends in a point, defined above by a slight pale streak on vein 6 with a semicircular grey spot above it at middle; postmedial line double, brown filled in with ochreous, arising from costa towards apex, incurved between veins 8 and 6, interrupted at the rufous fascia, then oblique and waved to vein 1, with deeper excision between veins 3 and 2, at vein 1 retracted upwards with an inward curve to the outer edge of the discoidal spot where it terminates, its sinus below the rufous fascia filled in with chocolate-brown; subterminal line indistinctly double, brown filled in with yellow, arising below vein 6 and at submedian fold bent outwards to inner margin towards tornus, some blackish brown suffusion beyond its upper extremity and at middle and before and beyond it towards inner margin; a lunulate black-brown line before termen from the apical area to above tornus; a double chocolate-brown terminal line. Hind wing pale grey-brown striated with red-brown, the terminal area fuscous brown except at tornus, on costa extending to middle; a large white medial patch from costa to vein 3, with a band from its lower extremity before a slightly sinuous dark brown postmedial line, with a faint line before it on the white band; a waved ochreous subterminal line from discal fold to inner margin to which it is bent outwards with black spots on its inner side at veins 5 to 2 and a blackish bar on inner area; some white on apical part of termen with an indistinct waved brown line before termen from it to inner margin followed by a fine waved yellow terminal line with black-brown suffusion before it. Underside of fore wing with the basal area and costal area to the postmedial band yellow, the rest of wing fuscous with white patches on apical area and on termen above tornus; a yellow discoidal annulus filled in with black with a blue-white point in centre, a white postmedial band interrupted by slight dark streaks on the veins, oblique to discal fold, then slightly incurved, a series of blackish striæ before termen double and filled in with some white on the dark area; hind wing with the basal and inner areas yellow, the rest of the wing fuscous with white patches at apex and on termen towards tornus, a round black discoidal spot with white point in centre and slight yellow mark towards outer edge, an obliquely excurved white medial band interrupted by slight dark streaks on the veins, its inner edge defined by a narrow dark band with dentate outer edge.

♂. Fore wing with the inner medial and postmedial areas more red-brown, the apical area yellower; hind wing without white patch on medial costal area or at apex, the postmedial line distinctly double, the underside with the postmedial band narrower and bluer, the white marks on termen much reduced except at apex of fore wing.

Hab. Aru Is.; Dutch N. Guinea (*Burke*), 1 ♀, Oetakwa R. (*Meek*), ♂ in Coll. Rothschild; Br. N. Guinea, Albert Edward Range (*Roker*), 1 ♀. *Exp.* 116–120 millim.

Genus **HYPÆTRA**.

	Type.
Hypætra, Guen. Noct. iii. p. 259 (1852)	*noctuoides.*
Avatha, Wlk. xiii. 1106 (1857)	*discolor.*
Pseudathyrma, Butl. A. M. N. H. (6) x. p. 299 (1892)	*complens.*
Pterochæta, Holl. Nov. Zool. vii. p. 568 (1900)	*stigmata.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and broadly scaled, the 3rd long; frons smooth, with tuft of hair above; eyes large, round; antennæ of male typically minutely ciliated; thorax clothed with hair and scales and without crests; fore tibiæ broadly fringed with hair, the mid and hind tibiæ slightly fringed with hair, the fore and hind tibiæ not spined; abdomen with ridges of hair and hairy crests on basal segments. Fore wing short and broad, the apex rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. (*Pseudathyrma.*) Antennæ of male with serrations ending in a bristle; fore wing with the subcostal nervure curved downwards, with a large patch of androconia edged by rough scales above it on underside, the subcostal neuration distorted; hind wing with an elliptical patch of androconia on underside below extremity of vein 6.

A. Fore wing of male with the terminal area ochreous tinged with brown; hind wing with whitish patch at middle of terminal area ..... *macrostidsa.*

B. Fore wing with the terminal area brown suffused with purplish grey; hind wing without whitish patch at middle of terminal area.

a. Fore wing without distinct oblique pale medial band ... *complens.*

b. Fore wing with distinct oblique pale medial band ..... *stigmata.*

7827. **Hypætra macrostidsa**, n. sp. (Plate CCXXIII. fig. 4.)

♂. Head and thorax brown mixed with ochreous; antennæ brown; palpi creamy white suffused with black-brown at sides; lower part of frons white, black at sides; pectus and legs ochreous white mixed with brown, the tarsi blackish ringed with white; abdomen grey-brown, the ventral surface ochreous white, irrorated with brown towards extremity. Fore wing grey-brown largely suffused with black-brown, the terminal area except at costa ochreous suffused with red-brown; subbasal line represented by small black spots on costa and median nervure; antemedial line double, black filled in with black-brown, oblique, the lines separating below submedian fold and forming a lobe on inner side and hook on outer above inner margin, defined on outer side by ochreous white below median nervure; the medial area red-brown with the depressed area pale with grey-brown and two blackish patches on costa; reniform obscurely defined by black, very narrow and forming a somewhat bilobate mark beyond lower angle of cell, an obliquely curved waved black line from it to inner margin; an oblique waved black line from below costa joining the upper extremity of the reniform; postmedial line very indistinct, double, oblique, defining the dark area, a dark brown patch before it beyond the reniform; some

ochreous white points on apical part of costa; subterminal line with two small black marks below costa, then slight and dentate; a fine crenulate black terminal line. Hind wing reddish brown, the terminal area with an ochreous patch irrorated with red-brown between discal fold and vein 1; postmedial line represented by double blackish bars between vein 3 and submedian fold and a small black spot on vein 1; a slight waved brown subterminal line on the pale patch and a series of minute blackish lunules on medial part of termen; cilia white towards apex and above vein 1; the underside pale grey-brown, a small whitish discoidal spot defined by brown and slight curved postmedial line with small blackish spots on it.

♀. Fore wing much more uniform grey-brown, the terminal area not paler, the medial area red-brown with oblique dark line from costa to the reniform and black spot on costa above end of cell, the postmedial area with some red-brown suffusion at middle; hind wing without the pale patch on termen.

Hab. Dutch N. Guinea, Kapaur (*Doherty*), 9 ♂, 4 ♀ type. *Exp.* ♂ 36–38, ♀ 40–44 millim.

7828. Hypætra complens.

Hypætra complens, Wlk. xiv. 1415 (1858); Hmpsn. Moths Ind. ii. p. 509.
Cropia glaucofascia, Wlk. xv. 1804 (1858).
Cropia onerata, Wlk. Journ. Linn. Soc., Zool. vii. p. 166 (1864).
Hypætra ruinosa, Swinh. A. M. N. H. (7) xv. p. 159 (1905).

♂. Head and thorax dark brown with a slight purplish grey tinge, the base of tegulæ ochreous; palpi white suffused with black

Fig. 15.—*Hypætra complens*, ♂. ½.

at sides; lower part of frons white, black at sides; pectus white; legs banded black and white; abdomen grey-brown, the base and anal tuft reddish brown, the ventral surface creamy white at base. Fore wing reddish brown, irrorated and in parts suffused with dark

brown, the terminal area suffused with purple-grey; an oblique waved black subbasal line from costa to submedian fold; antemedial line double, black, oblique, minutely waved, the lines separating below submedian fold and forming a lobe on inner side and a hook on outer just above inner margin; a black point in middle of cell; reniform indistinctly defined by black, narrow, its lower extremity forming a bilobate mark beyond lower angle of cell; medial line indistinctly double, oblique and diffused to the reniform, waved below the cell; a semicircular pale brown patch on costal area beyond the medial line enclosing a black-brown patch on costa, its outer edge defined by a black line connected with the upper edge of the reniform; postmedial line indistinct, double, oblique, minutely waved, a dark brown patch before it beyond the reniform; apical part of costa with alternating black and ochreous streaks; a very faint pale subterminal line, slightly waved and defined on outer side by black marks towards costa; a crenulate black terminal line with series of ochreous points beyond it on the termen. Hind wing greyish brown; postmedial line represented by a double black bar filled in with reddish brown from vein 3 to submedian fold and black and reddish striga at vein 1; a waved black line on middle of termen; cilia white towards apex and above vein 1; the underside brownish grey; a small ochreous discoidal spot defined by brown and small postmedial spots in discal fold and below vein 2.

♀. Fore wing with the patch on costa beyond the medial line less distinct and irregular, the dark spot on it nearer its inner edge; underside of hind wing browner with faint curved waved postmedial line.

Hab. Assam, Silhet, 1 ♂; Andamans, 1 ♀; Singapore (*Ridley*), 6 ♂, 4 ♀ type *ruinosa*; Sumatra (*Sir S. Raffles*), 1 ♂, 1 ♀ type and type *glaucofascia*; Borneo, Kuching (*Shelford*), 2 ♀. *Exp.* 36–50 millim.

7829. **Hypætra stigmata.** (Plate CCXXIII. fig. 5.)

Hypætra stigmata, Moore, P. Z. S. 1877, p. 610; Hmpsn. Moths Ind. ii. p. 509.
Pterochæta dohertyi, Holl. Nov. Zool. vii. p. 568 (1900).

♂. Head and thorax dark reddish brown with a faint purplish grey gloss; tegulæ with some white at base; palpi white suffused with black at sides; lower part of frons white, black at sides; pectus white; legs banded black and white; abdomen reddish brown, the ventral surface white suffused with brown towards extremity. Fore wing reddish brown suffused in parts with black-brown and glossed with purple-grey; an oblique waved black subbasal line from costa to submedian fold; antemedial line double, black filled in with dark brown, oblique, the two lines separating below submedian fold and forming a lobe on inner side and hook on outer just above inner margin, an oblique ochreous band beyond it suffused with red-brown on outer side; a black point in middle of cell; reniform indistinctly defined by black, narrow, its lower

extremity forming a somewhat bilobate mark beyond lower angle of cell; an obliquely curved sinuous black medial line; a black-brown spot defined by greyish on costa above end of cell and a small ochreous spot below its outer edge with a sinuous black line beyond it connected with the upper extremity of the reniform; postmedial line indistinctly double, brown, oblique; some ochreous points on postmedial part of costa; subterminal line indistinct, black-brown, waved to vein 4, then incurved; a crenulate black terminal line with series of rufous points beyond it. Hind wing reddish brown; postmedial line represented by a double black bar filled in with red-brown from vein 3 to submedian fold and black and reddish striga at vein 1, some dark brown and blue-grey suffusion beyond them; a waved blackish line at middle of termen; cilia white towards apex and above vein 1; the underside ochreous suffused and irrorated with red-brown, an ochreous discoidal spot defined by brown, traces of a curved postmedial line with dark spots at costa, discal fold, and below vein 2.

♀. Fore wing with the band beyond the antemedial line redder brown, the spot on costa above end of cell smaller without ochreous spot below it, the postmedial line bent outwards below costa, then oblique.

Hab. Andamans, 1 ♂; Buru, type† ♂ *dohertyi* in Coll. Holland; Solomons, Choiseul (*Meek*), 2 ♂, 1 ♀. *Exp.* ♂ 42, ♀ 48 millim.

Sect. II. Antennæ of male ciliated.

A. Mid tibiæ of male dilated with a fold containing a tuft of long hair.

7830. **Hypætra ethiopica**, n. sp.

Head and thorax dark brown mixed with grey and some pale rufous; antennæ blackish; palpi black-brown slightly irrorated with grey, pale at tips; legs blackish irrorated with grey, the extremities of the tibiæ and the tarsi ochreous ringed with black; abdomen fuscous brown, the ventral surface with white bars on terminal segments, lateral series of white points. Fore wing grey-brown suffused in parts with black-brown and with slight dark irroration, the terminal area paler; a waved black subbasal line from costa to vein 1 defined on inner side by ochreous brown; antemedial line black, waved, oblique to submedian fold, then bent inwards to inner margin, some black suffusion before it on inner area, defined on outer side by ochreous brown, broadly at costa and extending in the cell to its extremity; two indistinct waved dark medial lines, oblique to end of cell, then inwardly oblique; post-medial line black, bent outwards below costa, then oblique and rather irregularly waved, a dark brown band beyond it; the post-medial part of costa with alternating ochreous and black marks; subterminal line slight, dark defined on inner side by ochreous, minutely dentate, slightly incurved below costa and with two small black marks on it towards costa with ochreous marks beyond

them; a crenulate blackish terminal line with ochreous points beyond it in the interspaces; cilia black-brown. Hind wing fuscous brown; two slight blackish marks on vein 1 towards its extremity

Fig. 16.—*Hypætra ethiopica*, ♂. ½.

with an oblique whitish bar beyond them; cilia with a punctiform whitish line at base; the underside with small whitish discoidal spot and dark postmedial line from costa to submedian fold.

Hab. Gold Coast, Bibianaha (*Spurrell*), 1 ♀; S. Nigeria, Ilesha (*Humfrey*), 1 ♂ type; Uganda, Entebbe (*Minchin*), 1 ♀. *Exp.* 42–46 millim.

B. (*Hypætra.*) Mid tibiæ of male not dilated.
- *a.* Fore wing with quadrate black-brown patch beyond the cell forming a hook on inner side below ..... *novaguineana.*
- *b.* Fore wing with lunulate dark patch beyond the cell, sometimes obsolete, and without subbasal and antemedial black bars from costa ..... *discolor.*
- *c.* Fore wing with subbasal and antemedial black bars from costa, and without dark patch beyond the cell.. *noctuoides.*

7831. **Hypætra novaguineana.** (Plate CCXXIII. fig. 6.)

Hypætra novaguineana, Beth.-Baker, Nov. Zool. xiii. p. 262 (1906).

Head and thorax bright red-brown; palpi pale at tips; pectus, legs, and abdomen greyish brown. Fore wing bright red-brown with some grey irroration on basal and medial parts of costa and on postmedial area; a quadrate antemedial velvety black patch in submedian interspace defined at sides by yellow lines; a black point in middle of cell; a velvety black discoidal patch defined at sides by yellow lines, extending to well below the cell where it forms a hook on inner side; traces of a dark postmedial line, sinuous to vein 4, then incurved, the grey irroration forming slight streaks beyond it on the veins; an indistinct sinuous dark sub-

terminal line, excurved below vein 7 and at middle. Hind wing dark fuscous brown, the cilia whitish at tips towards apex and in submedian interspace.

Ab. 1. Head, thorax, and fore wing paler and more ochreous.

Hab. Br. N. Guinea, Ekeikei (*Pratt*), 1 ♂, 4 ♀, Mt. Kebea (*Pratt*), 3 ♂, 3 ♀. *Exp.* 44–54 millim. Type in Coll. Bethune-Baker.

7832. Hypætra discolor.

Noctua discolor, Fabr. Ent. Syst. iii. (2) p. 50 (1794).
Avatha includens, Wlk. xiii. 1107 (1857); Moore, Lep. Ceyl. iii. p. 172, pl. 170. f. 6; Hmpsn. Moths Ind. ii. p. 507.
Hypætra trigonifera, Wlk. xiv. 1411 (1858).
Hypætra curvifera, Wlk. xiv. 1412 (1858); Moore, Lep. Ceyl. iii. p. 174, pl. 170. f. 4; Hmpsn. Moths Ind. ii. p. 507.
Hypætra complacens, Wlk. xiv. 1414 (1858).
Ophiusa frontalis, Wlk. xiv. 1434 (1858).
Achæa expectans, Wlk. xv. 1827 (1858).

Head and thorax reddish brown; antennæ blackish; palpi and sides of frons deep chocolate-brown; pectus and legs grey-brown, the spurs and tarsi with pale rings; abdomen grey-brown, the ventral surface whitish. Fore wing purplish grey-brown faintly irrorated and striated with brown; a small tuft of white-tipped scales below base of cell; subbasal line black-brown, curved, from costa to median nervure; a deep chocolate-brown antemedial lunulate spot in submedian interspace slightly defined at sides by yellowish scales, with a red-brown band from it to costa, where there is a pale oblique striga with some dark brown beyond it; medial area pale greyish ochreous irrorated with red-brown; a black point in middle of cell; medial line red-brown, slight, excurved and sinuous to discal fold, then incurved; postmedial line black-brown, sinuous towards costa, incurved at discal fold to the disco-cellulars where there is a chocolate-brown spot on its outer side defined on inner side by yellow scales, beyond lower angle of cell produced to a small oblique loop, excurved below submedian fold, some pale points beyond it on costa; a slight crenulate dark terminal line. Hind wing grey-brown, the cilia white intersected with brown towards apex and white above vein 2; the underside grey-brown, the inner area whitish, a slight whitish discoidal lunule and rather diffused curved dark postmedial line from costa to submedian fold.

Ab. 1. Fore wing without the dark antemedial lunulate spot.

Ab. 2. Fore wing without the pale medial band, the antemedial spot present.

Ab. 3. *trigonifera*. Similar to ab. 2 but fore wing red-brown.

Ab. 4. Fore wing with blackish suffusion before the antemedial and beyond the postmedial lines, the medial area reddish brown, the antemedial spot absent.—N. Guinea.

Ab. 5. Similar to ab. 4 but fore wing with the basal and terminal areas suffused with silvery grey.—N. Guinea.

Ab. 6. *expectans*. Fore wing grey-brown striated with red-brown, the medial area suffused with dark brown, the antemedial spot absent.

Ab. 7. *frontalis*. Fore wing grey-brown or reddish brown, the ante- and postmedial lines absent or obsolescent and the antemedial spot absent, a brown patch on costa confluent with the postmedial spot.

Ab. 8. *curvifera*. Fore wing entirely suffused with deep chocolate-brown, the lines pale and indistinct, the ante- and postmedial spots absent.

Ab. 9. Fore wing grey-brown, the medial area red-brown, the lines indistinct, the spots absent.—Thursday I.

Hab. "India," 1 ♂ type *curvifera*; Madras, Nilgiris (*Hampson*), 2 ♀; Travancore, Pirmád (*Mrs. Imray*), 1 ♀; Ceylon (*Templeton*), 5 ♂, 7 ♀ types *trigonifera*, *curvifera*, and *expectans*, Colombo (*Nietner*, *Meade-Waldo*), 2 ♀ type *complacens*, Kandy (*Green*, *Meade-Waldo*), 2 ♂, 1 ♀, Trincomali (*Yerbury*), 3 ♀; Java (*Horsfield*, *Müller*), 1 ♂, 1 ♀, Arjuno (*Doherty*), 1 ♀; Dutch N. Guinea, Kapaur (*Doherty*), 1 ♀; Br. N. Guinea, Ekeikei (*Pratt*), 6 ♂, 5 ♀, Port Moresby, 1 ♂, Milne Bay (*Meek*), 1 ♀; Queensland, Thursday I. (*Mathew*), 1 ♂; Cook's Is., Rarotonga (*J. J. Walker*), 1 ♂; Society Is., Tahiti (*J. J. Walker*), 1 ♀, Eimeo I. (*J. J. Walker*), 1 ♂. *Exp.* 34–50 millim.

Larva. Semper, Reise Phil. Schmett. ii. p. 562, pl. 8. ff. 14, 15.

Grey; 1st somite with pair of dorsal black spots, the 3rd to 6th and 11th somites with dorsal black bars, the 11th with dorsal hump; abdominal somites with the dorsal area yellowish, the incisures with black lines, the lateral area with slight black streaks and more prominent streaks above the stigmata which are ringed with red-brown, the 12th somite with red-brown lateral streak and black sublateral streak; head red-brown; the anterior pair of claspers aborted and small. Food-plant, *Callicarpa mæsa*. 7.

7833. Hypætra noctuoides.

Hypætra noctuoides, Guen. Noct. iii. p. 259 (1852); Hmpsn. Moths Ind. ii. p. 507.

Head, thorax, and abdomen reddish brown; palpi chocolate-brown, except the 3rd joint; tarsi with pale rings; ventral surface of abdomen pale grey-brown. Fore wing reddish brown tinged with grey and with slight dark irroration; an oblique black subbasal bar from costa, its lower extremity produced to a slight hook on outer side; an inwardly oblique small wedge-shaped deep chocolate-brown antemedial spot from costa and large lunulate spot in submedian interspace slightly edged at sides by pale scales; faint traces of a curved dark medial line; reniform a bluish grey spot slightly defined by black scales, extending to below the cell and rather concave on inner side; faint traces of a dark postmedial line slightly excurved below the costa and closely approximated to

the reniform; an indistinct waved dark subterminal line, excurved below vein 7 and at middle; a faint crenulate dark terminal line. Hind wing grey-brown with a reddish tinge; a fine pale line at base of cilia; the underside pale reddish brown with a slight whitish discoidal striga.

Fig. 17.—*Hypætra noctuoides*, ♂. ½.

Hab. "N. India" (*James*), 2 ♀; Assam, Silhet (*Stainsforth*), 1 ♂, 1 ♀; Burma, Moulmein (*Clerk*), 1 ♂, Rangoon (*Noble*), 1 ♂; N. Borneo, 1 ♀; Java (*Horsfield*), 2 ♂, 1 ♀ type. *Exp.* 40–42 millim.

Genus CÆNURGIA.

	Type.
Cænurgia, Wlk. xiv. 1491 (1858)	*convalescens.*
Litosea, Grote, Can. Ent. vii. p. 49 (1875)	*convalescens.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint reaching to about vertex of head and moderately scaled, the 3rd moderate; frons smooth, with slight tuft of hair above; eyes large, round; antennæ of male typically bipectinate; thorax clothed with hair and scales mixed and without crests; build slender; tibiæ smoothly scaled, all the tibiæ spined; abdomen smoothly scaled and without crests. Fore wing rather long and narrow, the apex rounded, the termen obliquely curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate with moderate branches to apex.

A. Fore wing with the postmedial line angled outwards at submedian fold, then retracted and bent upwards to the reniform	*fortalitium.*
B. Fore wing with the postmedial line bent inwards to the reniform at vein 3	*runica.*

7834. Cænurgia fortalitium.

Noctua fortalitium, Tausch. Mém. Mosc. 1809, p. 323, pl. 20. f. 7; Staud. Cat. Lep. pal. p. 241.
Noctua fortatilium, Hübn. Eur. Schmett., Noct. f. 592 (1818); Dup. Lép. Fr., Suppl. iii. p. 523, pl. 44. f. 5; Frr. Neue Beitr. pl. 399. ff. 3, 4.

♂. Head and thorax grey mixed with brown; abdomen grey irrorated with black-brown. Fore wing pale grey irrorated with dark brown; an oblique wedge-shaped brown patch from the cell, where it extends from near base to near extremity, to just above middle of vein 1, edged by black and defined by white except above, its outer edge angled inwards at submedian fold; a wedge-shaped brown patch in end of cell with a black spot in lower angle, followed by the oblique whitish medial band; a brown postmedial band from below costa to submedian fold, edged by black and defined by white except above, its inner edge oblique, its outer edge excurved above, then incurved and angled outwards at submedian fold to near the subterminal line, which is white and strong, defined

Fig. 18.—*Cænurgia fortalitium*, ♂. ½.

on inner side by brown suffusion at costa and blackish spots above and below veins 7 and 9, defined on outer side by dark brown except towards tornus; a fine dark terminal line; cilia with two brown lines through them. Hind wing ochreous whitish suffused and irrorated with brown; a narrow ochreous whitish postmedial band, angled inwards beyond lower angle of cell and bent inwards to inner margin; an ochreous white subterminal line; the underside grey-white irrorated with brown, faint postmedial and subterminal dark shades except on inner area.

Hab. Russia, Urals, 1 ♂; W. Siberia, Altai; E. Turkestan, Thian Shán Mts. *Exp.* 34 millim.

7835. Cænurgia runica.

Euclidia runica, Feld. Reis. Nov. pl. 117. f. 11 (1874).
Euclidia tehuelcha, Berg. Bull. Soc. Mosc. xlix. iv. p. 221 (1875).
Euclidia magalhaensi, Staud. Hamburgh Magalhaens, iv. p. 79, pl. f. 8. (1898).

♂. Head, thorax, and abdomen greyish tinged with brown; antennæ with the branches black. Fore wing pale grey suffused and irrorated with brown; antemedial line whitish defined on outer side by dark brown, very oblique from costa to middle of vein 1 where it is joined by the whitish postmedial line defined on inner side by dark brown, which is excurved below below vein 7 and at vein 3 bent inwards to below end of cell, then sinuous to the antemedial line at vein 1; a minute brown spot in middle of cell; reniform faintly defined by brown and with brown striga in centre; the postmedial area rather browner to the strong somewhat oblique whitish subterminal line defined on outer side by brown. Hind wing whitish tinged with brown; an oblique brown postmedial line; a brown subterminal band rather diffused on inner side and excurved at vein 6; the underside whitish slightly irrorated with brown, the postmedial and subterminal lines faint and diffused.

♀. Pectus and abdomen fulvous yellow irrorated with brown; fore wing strongly suffused and irrorated with red-brown, the area between the ante- and postmedial lines below the cell dark brown, the subterminal line tinged with yellow, a waved brown terminal line, cilia with fulvous yellow mixed; hind wing fulvous yellow, the postmedial line and subterminal band darker, a brown terminal line, cilia with brown mixed.

Hab. Chili (*Sadler*), 1 ♂, 1 ♀, Mulchen (*Elwes*), 2 ♂, 3 ♀, Araucania (*B. Calvert*), 1 ♂, 3 ♀; Patagonia, Chubut, Lago Blanco, 5 ♂, 1 ♀, Straits of Magellan (*J. J. Walker*), 2 ♀, Sandy Point (*J. J. Walker*), 1 ♀; Tierra del Fuego. *Exp.* 34–44 millim.

Sect. II. Antennæ of male bipectinate with short branches, the apex ciliated.

A. Fore wing with the postmedial line retracted at submedian fold to lower angle of cell.
  a. Hind wing of male whitish tinged with brown, of female with the basal and inner areas suffused with brown ..... *convalescens*.
  b. Hind wing of male white, of female ochreous yellow... *adusta*.
B. Fore wing with the postmedial line oblique to inner margin ..... *togalaria*.

7836. Cænurgia convalescens.

Drasteria convalescens, Guen. Noct. iii. p. 289, pl. 22. f. 9 (1852); Smith, Cat. Noct. N. Am. p. 318.
Cænurgia purgata, Wlk. xiv. 1492 (1858).
Cænurgia socors, Wlk. xiv. 1492 (1858).

♂. Head, thorax, and abdomen grey-white suffused with brown, the abdomen somewhat paler. Fore wing grey suffused and

irrorated with brown; antemedial line brown faintly defined on inner side by whitish, oblique to submedian fold, then erect and slightly sinuous; a small brown spot in middle of cell; reniform faintly defined by brown, slightly angled inwards on median nervure; postmedial line brown faintly defined on outer side by whitish, slightly excurved at vein 7, then slightly waved, at vein 2 retracted to lower angle of cell and at submedian fold again excurved, some brown suffusion on its outer side at discal fold; a faint pale subterminal line defined on outer side by blackish points. Hind wing whitish tinged with brown; a diffused slightly sinuous brown postmedial line; a narrow diffused brown subterminal band; a brown terminal line; the underside tinged with red-brown, a faint

Fig. 19.—*Cænurgia convalescens*, ♂. ½.

brown discoidal spot, the postmedial line curved and ending at vein 2, a brownish subterminal shade from costa to vein 3.

♀. Head, thorax, abdomen, and fore wing more strongly suffused with brown, the last with the ante- and postmedial lines very indistinct; hind wing with the basal and inner areas strongly suffused with brown.

Hab. Canada, Renfrew Co. (*Grote*), 1 ♀, Br. Columbia, New Westminster (*Durrant*), 1 ♀; U.S.A., New York, 3 ♂, 2 ♀, Georgia, 1 ♂, Florida (*Doubleday*), 3 ♂ types *purgata* and *secors*, Centr. States. *Exp.* 36–46 millim.

7837. **Cænurgia adusta.** (Plate CCXXIII. fig. 7.)

Poaphila adusta, Wlk. xxxiii. 988 (1865).
? *Drasteria convalescens*, Herr.-Schäff. Corresp.-blatt. zool.-min. Ver. Regensb. xxiii. p. 155 (1869).

♀. Head and thorax pale rufous; abdomen yellowish white slightly irrorated with rufous, the ventral surface suffused with rufous. Fore wing bright rufous irrorated with grey; antemedial line rufous, curved; medial line rufous, oblique to middle of cell, then erect and waved; reniform slightly defined by rufous; post-

medial line rufous defined on outer side by whitish, oblique to vein 6, then erect and slightly waved to submedian fold, then indistinct and retracted to lower angle of cell and again excurved at submedian fold, a black mark beyond it between veins 6 and 4; subterminal line whitish, slightly waved, defined on outer side by a series of black points; a waved rufous terminal line. Hind wing whitish suffused with ochreous and irrorated with brown; a diffused dark postmedial line; a fuscous subterminal band diffused on inner side and defined on outer side by whitish; a waved red-brown terminal line; cilia rufous; the underside suffused and irrorated with rufous, a dark discoidal spot, slight postmedial line, and subterminal band slightly excurved at middle.

♂. Head, thorax, and fore wing grey tinged with brown and irrorated with fuscous, the last with slight dark mark beyond the postmedial line at discal fold; hind wing white faintly tinged with brown, the postmedial line and subterminal band much reduced.

Hab. Honduras (*Dyson*), 1 ♂; ? Cuba; Haiti (*Tweedie*), 1 ♀ type. *Exp.* 34 millim.

7838. **Cænurgia togataria.** (Plate CCXXIII. fig. 8.)

Anaitis togataria, Wlk. xxv. 1445 (1862).
Litosea adversa, Grote, Can. Ent. vii. p. 49 (1875); Smith, Cat. Noct. N. Am. p. 318.
Cænurgia purgata, Druce, Biol. Centr.-Am., Het. i. p. 387 (nec Wlk.).

♂. Head and thorax pale grey suffused with brown; abdomen white slightly tinged with brown. Fore wing pale grey tinged with brown and irrorated with dark brown; antemedial line very indistinct, brownish, oblique, sinuous; a blackish point in middle of cell; reniform faintly defined by brown and slightly angled inwards at median nervure; traces of an oblique brown line from lower angle of cell to inner margin at the antemedial line; postmedial line whitish faintly defined on each side by brown, oblique below vein 7; a faint oblique pale subterminal line defined on outer side by minute blackish points at the veins; a slight waved brown terminal line. Hind wing white faintly tinged with brown; a faint oblique diffused brownish postmedial line and faint white subterminal line slightly defined on each side by brown; the underside with the costal half irrorated with red-brown.

♀. Fore wing browner; hind wing with the subterminal line more distinctly defined on inner side by diffused brown except towards apex and tornus.

Hab. U.S.A., California, 1 ♂, 2 ♀, type *adversa*, Palo Alto (*Barnes*), 1 ♂, Sta. Barbara (*D'Urban*) 2 ♂; Mexico, 1 ♂, Oajaca (*Salle*), 1 ♀ type, Orizaba (*Elwes*, *Godman*), 1 ♂, 1 ♀, Jalapa (*Hoege*), 1 ♂, Milpas (*Forrer*), 1 ♂, 1 ♀, Coatepec (*Brooks*), 2 ♂, Cuernavaca (*H. H. Smith*), 1 ♂, Durango (*Becker*), 2 ♂; Guatemala, San Geronimo (*Champion*), 2 ♂, 2 ♀; Costa Rica (*Van Patten*), 1 ♀, Candelaria Mts. (*Underwood*), 1 ♂, 1 ♀; Panama, Chiriqui (*Champion*), 1 ♂, Godman-Salvin Coll. *Exp.* 38–50 millim.

Sect. III. Antennæ of male ciliated.

A. Fore wing with triangular black-brown antemedial patch in submedian interspace and two postmedial patches.
  a. Fore wing with the lower extremity of the antemedial triangular patch produced to below the sinus of the postmedial line above inner margin .... *intercalaris*.
  b. Fore wing with the lower extremity of the antemedial triangular patch not produced to below the sinus of the postmedial line above inner margin ..... *diagonalis*.
B. Fore wing without ante- and postmedial black-brown patches.
  a. Hind wing strongly suffused with brown to the postmedial line.
    a^1. Fore wing with the antemedial line bent outwards above inner margin to join the postmedial line ..... *erechtea*.
    b^1. Fore wing with the antemedial line extending to inner margin and not bent outwards to join the postmedial line..... *crassiuscula*.
  b. Hind wing ochreous white with some brown irroration .. *distincta*.

7839. Cænurgia intercalaris. (Plate CCXXIII. fig. 9.)

Euclidia intercalaris, Grote, Bull. Geog. Geol. Surv. Terr. vi. p. 563 (1882); Smith, Cat. Noct. N. Am. p. 319.
Euclidia dyari, Smith, Trans. Am. Ent. Soc. xxix. p. 214 (1903).

Head and thorax grey mixed with brown; antennæ whitish; abdomen grey tinged with brown. Fore wing grey irrorated with dark brown, the costal edge brown; a short black fascia above inner margin before middle; an obliquely curved wedge-shaped black patch shading to brown below median nervure, on which it extends from before middle to the reniform, to above inner margin beyond middle, defined by whitish except above; the cell except towards base suffused with red-brown with a wedge-shaped black streak in it before the reniform, which is oblique, grey with its centre irrorated with brown; a white line from outer edge of reniform curving down to submedian fold, then upwards as the postmedial line to costa towards which it is defined on inner side by black; an elongate black patch from the upper part of reniform to the postmedial line and a conical black patch filling in the lower part of its sinus, the area between them suffused with red-brown with whitish streaks on veins 4, 3; some red-brown suffusion beyond and below the postmedial line; a double white subterminal line with a black bar before it on costal area and black line from vein 3 to inner margin; a waved black terminal line; cilia brown at base, white at tips. Hind wing grey suffused with brown; a brown postmedial line diffused on inner side and defined on outer side by whitish; a curved brown subterminal shade diffused on inner side; a blackish terminal line; cilia brown at base, whitish at tips; the underside grey-white tinged and irrorated with brown.

Hab. U.S.A., New Mexico, 1 ♀ type, Arizona, Tucson (*Oslar*), 1 ♂, Oracle (*Oslar*), 1 ♂, Phœnix Co., Sta. Catalina Mts., 1 ♂.
Exp. 34 millim.

7840. Cænurgia diagonalis. (Plate CCXXIII. fig. 10.)

Euclidia diagonalis, Dyar, J. N.Y. Ent. Soc. vi. p. 41 (1898); id. Cat. Lep. N. Am. p. 221.

Head, thorax, and abdomen grey mixed with brown; antennæ whitish. Fore wing grey irrorated with brown; a short black fascia above inner margin before middle; a triangular antemedial black patch defined by white in submedian interspace; median nervure streaked with white; a slight wedge-shaped black streak in cell before the reniform, which is red-brown with faint pale annulus, elliptical; a white line from lower angle of cell curving down to submedian fold, then upwards as the postmedial line to costa, towards which it is defined on inner side by black; an elongate black patch from the upper part of reniform to the postmedial line and a conical black patch filling in the lower part of its sinus, veins 4, 3 between them streaked with white; some red-brown suffusion beyond the postmedial line, then running upwards to the cell before its sinus; subterminal line double, white, defined on inner side by two black spots below costa, then by some black scales and two spots between veins 3 and 1; the terminal area tinged with brown except at apex; a waved black terminal line; cilia brown at base, white at tips. Hind wing grey suffused with brown and irrorated with blackish; a sinuous white postmedial line excurved at submedian fold; a curved dark subterminal shade defined on outer side by whitish except towards costa; a blackish terminal line; cilia brown at base, white at tips, the underside whitish tinged and irrorated with brown, a sinuous brown postmedial shade and curved subterminal shade.

Hab. U.S.A., Arizona, Tucson (*Oslar*), 1 ♂, Oracle (*Oslar*), 1 ♀. *Exp.* 28–32 millim.

7841. Cænurgia erechtea.

Phalæna erechtea, Cram. Pap. Exot. iii. p. 149, pl. 275. f. E (1782); Smith, Cat. Noct. N. Am. p. 316.
Poaphila patibilis, Wlk. xiv. 1471 (1858).
Poaphila narrata, Wlk. xiv. 1474 (1858).
Drasteria agricola, Grote & Rob. Trans. Am. Ent. Soc. i. p. 189, pl. iv. f. 34 (1868).
Drasteria mundula, Grote & Rob. Trans. Am. Ent. Soc. i. p. 191, pl. iv. f. 35 (1868).

♂. Head, thorax, and abdomen purplish mixed with brown; antennæ ringed with white; pectus, legs, and ventral surface of abdomen whitish mixed with brown. Fore wing purplish grey irrorated with brown; a slight oblique subbasal brown striga from costa; antemedial line dark defined on inner side by whitish and on outer side by diffused chocolate-brown, oblique and sinuous from costa to above middle of inner margin where it is met by two faint sinuous lines from median nervure before end of cell; a black point in middle of cell; reniform faintly defined by brown; a chocolate-brown postmedial band from costa to submedian nervure, attenuated

above and below and diffused inwards on costa to above the reniform, defined on outer side by the very faint slightly sinuous postmedial line, which is somewhat oblique to vein 7; a subterminal dark shade from costa to below vein 7, diffused on inner side and waved on outer, followed by a series of blackish points on the veins; the termen suffused with reddish brown from apex to submedian fold; a waved brown terminal line. Hind wing grey suffused with brown; a brown postmedial line defined on outer side by whitish and excurved at submedian fold; a brown subterminal shade and terminal line; cilia whitish tinged with brown at base; the underside white tinged with rufous and irrorated with red-brown, a sinuous brown postmedial line.

Fig. 20.—*Cænurgia erechtea*, ♂. ½.

♀. Fore wing suffused with red-brown, the markings very indistinct, no chocolate-brown beyond the antemedial or before the postmedial lines.

Hab. CANADA, Renfrew Co. (*Grote*), 2 ♂, 2 ♀, Toronto (*Prout*), 1 ♂, Vancouver I. (*J. J. Walker*), 1 ♂, 2 ♀; U.S.A., Massachusetts, Beverly (*Burg*), 1 ♀, New York (*Doubleday, Fuchs, Packard*), 9 ♂, 7 ♀, Garrison (*Cockerell*), 1 ♂, 1 ♀, Texas, Dallas (*Boll*), 1 ♀, Washington, 1 ♂, Colorado, Durango (*Oslar*), 3 ♂, 1 ♀, California (*Osten Sacken, Behrens*), 3 ♂. *Exp.* 38–54 millim.

Egg. Greyish green with irregular grey-brown markings, the apex with rounded facets, the sides coarsely ribbed.

Larva. Saunders, Can. Ent. i. p. 4 & vii. p. 116; French, Papilio, iv. p. 149; Riley, 4th Rept. U.S. Ent. Comm. p. 352, pl. 62. f. 5.

Greyish yellow with two broad blackish somewhat interrupted dorsal stripes. Food-plants: Grass, Clover, Cottonwood.

Pupa. Head and thorax dark brown; abdomen pale brown with the incisures darker, with slight purplish bloom, the extremity with eight hooklets.

7842. Cænurgia crassiuscula. (Plate CCXXIII. fig. 11.)

Phytometra crassiuscula, Haw. Lep. Brit. p. 259 (1809); Steph. Ill. Brit. Ent., Haust. iii. p. 126; Wood, Index Ent. pl. 17. f. 436; Smith, Cat. Noct. N. Am. p. 317.
Drasteria erichto, Guen. Noct. iii. p. 290 (1852).
Microphysa sobria, Wlk. xii. 835 (1857).
Drasteria ochrea, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 155 (1873).
Remigia impressa, Butl. Cist. Ent. i. p. 117 (1872); id. Lep. Exot. pl. lxi. f. 19.
Remigia latipes, Druce, Biol. Centr.-Am., Het. i. p. 388 (part.), nec Guen.

♂. Head, thorax, and abdomen purplish grey mixed with brown; antennæ ringed with whitish; palpi, pectus, legs, and ventral surface of abdomen whitish irrorated with brown. Fore wing purplish grey irrorated with brown; subbasal line brown, curved, from costa to submedian fold; antemedial line brown defined on inner side by whitish and on outer side by diffused chocolate-brown, oblique and sinuous from costa to above middle of inner margin where it is met by two slight sinuous brown lines from median nervure before end of cell; a small black spot in middle of cell; reniform defined by brown, large; a chocolate-brown postmedial band from below costa to submedian fold, its edges slightly waved and its outer edge defined by the slight postmedial line; an oblique subterminal series of small dentate blackish marks on the veins with some chocolate-brown at costa and larger black spots at veins 8 and 7; the termen suffused with reddish brown from apex to submedian fold; a waved brown terminal line. Hind wing whitish tinged with grey-brown and slightly irrorated with brown, the basal half more strongly tinged with brown; a rather diffused brown postmedial line strongly incurved beyond lower angle of cell, then excurved; a rather diffused dark brown subterminal band, slightly excurved at discal fold and ending on termen at vein 1; a dark brown terminal line; cilia whitish tinged with brown; the underside whitish faintly tinged with rufous and irrorated with brown except on inner area.

♀. Fore wing with the antemedial line extending to inner margin, oblique and nearly straight, not defined on inner side by whitish and the chocolate-brown beyond it not diffused; the inner line from median nervure (medial line) erect and sinuous, the outer line (part of the postmedial line) excurved below submedian fold, reniform smaller, postmedial line with slight red-brown suffusion before it beyond the cell, terminal area without red-brown suffusion; hind wing with the basal half more strongly suffused with brown, the underside with the inner area irrorated with brown, a faint sinuous postmedial line.

Hab. Canada, Hudson's Bay, Albany R., St. Martin's Falls (*Barnston*), 4 ♀, Nova Scotia (*Redman*), 1 ♂, 3 ♀, Ottawa (*Mrs. Nicholl*), 1 ♀, Calgary (*Wolley-Dod*), 3 ♂, Vancouver I. (*J. J. Walker*), 1 ♂; U.S.A., 1 ♀ type *sobria*, Massachusetts, 1 ♂, New York (*Packard*), 3 ♂, 3 ♀, Trenton Falls (*Doubleday*), 1 ♂, 1 ♀,

Garrison (*Cockerell*), 1 ♂, N. Illinois, 2 ♂, 2 ♀, Texas, Dallas (*Boll*), 2 ♂, 2 ♀, Colorado, Boulder (*Cockerell*), 1 ♂; Mexico, Durango (*Becker*), 1 ♂, Godman-Salvin Coll.; Costa Rica, Castago (*Van Patten*), 1 ♂ type *impressa*. *Exp.* 34–44 millim.

7843. **Cænurgia distincta.** (Plate CCXXIII. fig. 12.)

Drasteria distincta, Neum. Papilio, iii. p. 143 (1883); Smith, Can. Ent. xxxii. p. 225, pl. v. ff. 11, 12; id. Cat. Noct. N. Am. p. 317.

♂. Head and thorax pale grey mixed with brown; antennæ ringed with white towards base; palpi, pectus, legs, and abdomen grey-white slightly irrorated with brown. Fore wing pale grey irrorated with brown; subbasal line brown, curved, from costa to submedian fold; antemedial line chocolate-brown, strong, obliquely curved from costa to above middle of inner margin, above which it is curved outwards and met by a sinuous medial line and two lines from lower angle of cell excurved below submedian fold; a small black spot in middle of cell; reniform defined by brown, large; a reddish brown postmedial band from costa to submedian fold, defined on outer side by the postmedial line, which is slightly excurved below the costa and vein 3; two subterminal black spots below costa followed by a series of minute blackish spots on the veins on a slight brownish shade; the costa towards apex and the termen from apex to vein 2 suffused with brown; a waved brown terminal line; cilia suffused with brown. Hind wing ochreous white with some brown irroration, the basal and inner areas browner; a somewhat diffused dark postmedial line from below costa to tornus, incurved beyond lower angle of cell, then excurved; a dark brown subterminal band, slightly excurved at discal fold and ending on termen at vein 1; a dark brown terminal line; cilia grey, tinged with brown except towards tornus; the underside grey-white irrorated with brown, a faint subterminal shade.

♀. Head, thorax, abdomen, and fore wing rather darker, the last with the lines more diffused, the antemedial line extending to inner margin.

Hab. Arctic America, Slave R., Rapids of the Drowned (*Taylor*), 2 ♀; Canada, Manitoba, Aweme (*Criddle*), 1 ♂, Alberta, Calgary (*Mrs. Nicholl, Wolley-Dod*), 8 ♂, 3 ♀, Br. Columbia, Greenwood (*Mrs. Nicholl*), 2 ♂, Pentecton (*Mrs. Nicholl*), 3 ♂, Okanaga R., Hedley (*Mrs. Nicholl*), 1 ♀, Up. Ashnold (*Mrs. Nicholl*), 4 ♂. *Exp.* 32–38 millim.

Genus **REMIGIODES**, nov.

Type, *R. remigina*.

Proboscis fully developed; palpi obliquely upturned, the 2nd joint reaching to vertex of head and broadly scaled, the 3rd porrect, moderate, and thickly scaled; frons with pointed conical prominence covered by a tuft of hair above; eyes large, round; antennæ of male bipectinate with moderate

branches ending in bristles, the apex serrate; thorax clothed with scales and hair mixed and without crests; tibiæ moderately fringed with hair, the fore tibiæ not spined, the mid and hind tibiæ spined; abdomen with dorsal crest at base only. Fore wing with the apex rounded, the termen evenly curved and crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

7844. Remigiodes remigina.

Euclidia remigina, Mab. C. R. Soc. Ent. Belg. xxviii. p. cxci (1884).
Remigia pectinata, Hmpsn. Tr. Zool. Soc. xix. p. 110, pl. iv. f. 32 (1909).

Head and thorax purplish grey suffused with red-brown; abdomen yellow, the basal crest brown. Fore wing purplish grey suffused and irrorated with red-brown; a small red-brown subbasal spot on costa; antemedial line brown, oblique, defined on outer side by red-brown from costa to vein 1, incurved in submedian interspace where there is a conical red-brown patch beyond it, a small round black spot before it above inner margin; a sinuous brown medial line angled outwards in cell and inwards at vein 1; reniform obscurely

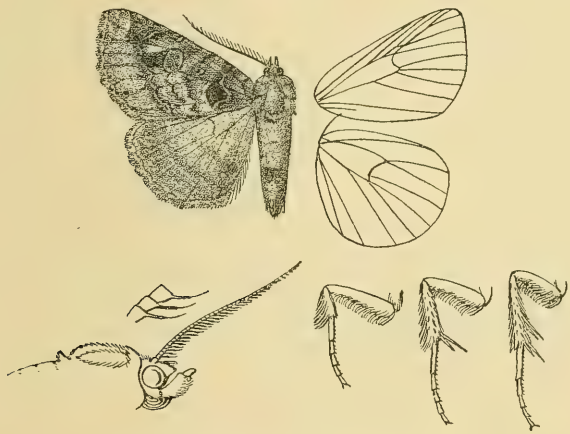


Fig. 21.—*Remigiodes remigina*, ♂. ½.

defined by brown and with a dark red-brown patch beyond it; a brown annulus below end of cell, its outer edge indented; post-medial line red-brown with some red-brown suffusion before it, oblique to above vein 6, slightly bent inwards at discal fold, then obliquely curved to inner margin, a red-brown patch beyond it on costal area; a very indistinct dentate subterminal line slightly defined on each side by brown and with blackish points at veins 6 to 1; the termen suffused with red-brown from apex to vein 2; a

waved red-brown terminal line; cilia red-brown at tips. Hind wing yellow, the terminal area suffused with red-brown; a slight oblique brown postmedial line from discal fold to inner margin, excurved in submedian interspace; a waved red-brown terminal line; cilia red-brown at tips. Underside yellow; fore wing tinged with brown except on terminal area; hind wing slightly irrorated with brown, a slight curved postmedial line from costa to vein 2.

Hab. S. NIGERIA, Lakoja, Mt. Patti (*Christy*), 1 ♀; UGANDA, Ruwenzori (*Wollaston*), 1 ♂, 1 ♀ type *pectinata*; MADAGASCAR, type † ♂ in Coll. Mabille. *Exp.* 44-50 millim.

Genus **MOCIS.**

	Type.
Mocis, Hübn. Verz p. 267 (1827)	*undata.*
Pelamia, Guen. Noct. iii. p. 286 (1852)	*phasianoides.*
Remigia, Guen. Noct. iii. p. 312 (1852)	*frugalis.*
Baratha, Wlk. xxxiii. 1021 (1865)	*disseverans.*
Cauninda, Moore, Lep. Ceyl. iii. p. 190 (1884)	*undata.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching about to vertex of head and moderately scaled, the 3rd typically moderate, oblique; frons smooth; eyes large, round; antennæ of male typically ciliated; thorax clothed almost entirely with scales and without crests; tibiæ of male typically fringed with long hair, the fore tibiæ not spined, the hind tibiæ spined; build slender; abdomen smoothly scaled and without crests. Fore wing with the apex somewhat produced, the termen evenly curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell one-half length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

SECT. I. (*Pelamia.*) Antennæ of male bipectinate with moderate branches; tibiæ smoothly scaled.

A. Fore wing with diffused brown shading above the pale streak in submedian fold and beyond the oblique postmedial line ..... *phasianoides.*

B. Fore wing with a narrow blackish streak above the pale streak in submedian fold and narrow blackish band beyond the oblique postmedial line ..... *electaria.*

7845. **Mocis phasianoides.**

Pelamia phasianoides, Guen. Noct. iii. p. 286, pl. 22. f. 8 (1852).

♂. Head, thorax, and abdomen grey-white irrorated with brown; antennæ with the branches brown; legs brown. Fore wing grey-white irrorated with brown; an oblique white line from below costa well beyond middle to above vein 1 along which it is bent inwards to base with a wedge-shaped brown patch above it; a slight brown discoidal striga; the postmedial line followed by a brown band extending to the oblique rather diffused white subterminal line defined on outer side by brown suffusion; a brown terminal line; cilia brownish with a white line at base. Hind wing white, the

inner area slightly irrorated with brown; a faint brownish subterminal shade; a fine brown terminal line; cilia tinged with brown; the underside white irrorated with brown.

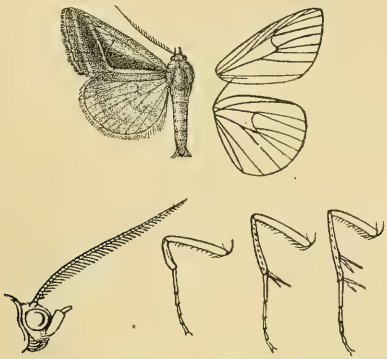


Fig. 22.—*Mocis phasianoides*, ♂. ½.

♀. Hind wing yellower, more suffused with brown and with diffused brown postmedial and subterminal lines.

Hab. URAGUAY, Montevideo; PARAGUAY; ARGENTINA, Buenos Ayres (*O. Thomas*, *Bayne*), 1 ♂, 1 ♀. *Exp.* 34–44 millim.

7846. **Mocis electaria.**

Doryodes electaria, Brem. Lep. Ost-Sib. p. 84, pl. vii. f. 12 (1864); Staud. Cat. Lep. pal. p. 241.

♂. Head, thorax, and abdomen grey-white tinged with brown; antennæ with the branches blackish. Fore wing white tinged and thickly irrorated with brown; an oblique white line diffused on inner side from below apex to submedian fold, then bent inwards above vein 1 to near base and defined above by a black streak, the line defined on outer side by a narrow black band from below apex to submedian fold; a minute blackish discoidal spot; a brownish subterminal line defined on each side by whitish; a brown terminal line; cilia whitish with a brown line at middle. Hind wing white, the inner area tinged with red-brown; a red-brown terminal line; the underside white faintly tinged with red-brown.

♀. Hind wing more suffused with brown.

Ab. 1. Fore wing with the black streak in submedian fold obsolescent.

Hab. E. SIBERIA, Amurland, Ussuri; JAPAN, Yesso (*Leech*), 1 ♀, Hakodaté (*Pryer*), 1 ♀, Oiwaké (*Pryer*), 2 ♂, 1 ♀, Tokio (*Fenton*), 2 ♂, Yokohama (*Jonas*, *Manley*), 2 ♂, 1 ♀; COREA, Gensan (*Leech*), 1 ♂, Douglas Inlet (*B. Fletcher*), 1 ♂; CENTR. CHINA, Chekiang (*Pryer*), 1 ♂. *Exp.* 34–42 millim.

Sect. II. Antennæ of male ciliated.

A. Fore and mid tibiæ of male moderately fringed with hair, the hind tibiæ thickly clothed with hair.
a. Hind tarsi of male fringed above with long hair.
a[1]. (*Remigia.*) Wings of male on underside clothed with woolly hair to beyond middle.
a[2]. Hind wing tinged with rufous.
a[3]. Fore wing with the postmedial line retracted at submedian fold and forming a sinus below end of cell.
a[4]. Hind wing with the basal and inner areas tinged with brown; size large.
a[5]. Fore wing of male with small antemedial black spot above inner margin; hind wing strongly suffused with brown ..... *antillesia.*
b[5]. Fore wing of male without small antemedial black spot above inner margin; hind wing with the basal and inner areas slightly tinged with brown ..... *megas.*
b[4]. Hind wing with the basal and inner areas not tinged with brown; size smaller.
a[5]. Fore wing of male with small antemedial black spot above inner margin..... *cubana.*
b[5]. Fore wing of male without small antemedial black spot above inner margin ..... *bahamica.*
b[3]. Hind wing with the postmedial line oblique to inner margin and not connected with the annulus below end of cell ..... *munda.*
b[2]. Hind wing not tinged with rufous.
a[3]. Fore wing with the postmedial line retracted at submedian fold and forming a sinus below end of cell; size large ..... *marcida.*
b[3]. Fore wing with the postmedial line oblique to inner margin.
a[4]. Hind wing not strongly suffused with brown.
a[5]. Fore wing with the ground-colour clear grey; size large ..... *texana.*
b[5]. Fore wing with the ground-colour brownish ochreous..... *disseverans.*
b[4]. Hind wing strongly suffused with brown.
a[5]. Fore wing with the postmedial line excurved below costa, then moderately oblique.
a[6]. Fore wing not variegated with red-brown and without triangular red-brown patch at middle of terminal area; the fringe of hair on hind tarsi and ventral surface of abdomen greyish in male..... ..... *repanda.*
b[6]. Fore wing variegated with red-brown and with triangular red-brown patch at middle of terminal area; the fringe of hair on hind tarsi and ventral surface of abdomen yellowish in male..... *diffluens.*
b[5]. Fore wing with the postmedial line arising from below costa towards apex and much more oblique.
a[4]. Hind wing grey tinged with brown ..... *frugalis.*
b[4]. Hind wing ochreous..... *vitiensis.*

7847. **Mocis antillesia**, n. sp. (Plate CCXXIII. fig. 13.)

♂. Head and thorax dark brown mixed with greyish, the patagia with slight oblique white line at middle; pectus and legs dark reddish brown; abdomen whitish tinged with brown. Fore wing grey suffused and irrorated with brown; subbasal line slight, double, brown, from costa to submedian fold; antemedial line strong, brown, obliquely incurved below subcostal nervure, a small black spot before it above inner margin; a minute whitish spot defined by brown in middle of cell; reniform defined by brown and with some dark suffusion in centre; a slight waved dark medial line; postmedial line brown, excurved below costa, then obliquely incurved to submedian fold where it is bent inwards, then curved upwards to lower angle of cell and down to submedian fold, then again excurved, the area beyond it darker brown from costa to submedian fold; traces of a waved subterminal line with a series of black points beyond it on the veins; a fine waved dark terminal line; cilia dark brown. Hind wing brown with a reddish tinge; a dark postmedial line, excurved in submedian interspace; a dark subterminal shade from apex to termen at vein 1; a fine dark terminal line; cilia dark reddish brown from apex to vein 2; the underside grey-brown with a reddish tinge to beyond middle, a dark subterminal shade from costa to vein 2.

Hab. Bahamas (*Neville Chamberlain*), 1 ♂; Nevis (*Taylor*), 2 ♂ type. *Exp.* 50–58 millim.

7848. **Mocis megas**. (Plate CCXXIII. fig. 14.)

Remigia megas, Guen. Noct. iii. p. 317, pl. 23. f. 6 (1852).
Remigia remanens, Wlk. xiv. 1498 (1858).
Remigia alipes, Feld. Reis. Nov. pl. 117. f. 12 (1874).

♂. Head, thorax, and abdomen grey suffused with reddish brown; pectus and the hair on femora and hind tibiæ and tarsi rufous. Fore wing grey suffused with reddish brown; a slight brown subbasal line defined on outer side by whitish from costa to submedian fold; antemedial line brown defined on inner side by whitish and with some brown suffusion beyond it, oblique and very slightly incurved below subcostal nervure; a minute white spot defined by brown in middle of cell; reniform defined by brown and with brown striga in centre; a slight waved brown medial line; postmedial line brown, oblique and sinuous from costa to above vein 6, then obliquely incurved to submedian fold where it is bent inwards, then curved upwards to lower edge of reniform and down to submedial fold where it is again excurved, a slight waved dark line before it from costa to vein 3 and a browner shade beyond it from costa to submedian fold; traces of a waved subterminal line with series of black points beyond it on the veins; a fine waved dark terminal line; cilia dark brown at tips from apex to submedian fold. Hind wing grey-brown with a slight rufous tinge;

an indistinct dark postmedial line incurved in submedian interspace, and a dark subterminal shade; a fine dark terminal line; the underside pale rufous to beyond middle.

♀. Redder; fore wing with the antemedial line more incurved and without black spot before it; underside of hind wing ochreous, the basal costal area tinged with rufous, a slight postmedial line and subterminal shade from costa to vein 2.

Hab. Guatemala, type † ♂ *alipes* in Coll. Rothschild; Jamaica (*Gosse*), 1 ♂, Cinchona (*Kaye*), 1 ♀; Haiti (*Tweedie*), 1 ♂, 1 ♀ type *remanens*. *Exp.* 52–60 millim.

7849. **Mocis cubana**, n. sp. (Plate CCXXIII. fig. 15.)

♂. Head and thorax grey mixed with reddish brown; pectus and the fringes of hair on hind legs rufous; abdomen ochreous tinged with rufous, the ventral surface rufous. Fore wing grey tinged with rufous and irrorated with red-brown; a subbasal brown striga from costa; antemedial line red-brown defined on inner side by ochreous, slightly excurved below costa, then oblique, a small black spot before it above inner margin; a minute white spot defined by brown in middle of cell; reniform faintly defined by brown and with some fuscous in centre; medial line indistinct, dark, oblique to median nervure, then inwardly oblique and with some fuscous suffusion above inner margin; postmedial line red-brown, oblique and sinuous to above vein 6, then inwardly oblique to submedian fold where it is bent inwards, then curved upwards and sinuous to lower edge of reniform and down to submedian fold where it is again bent outwards; the postmedial area suffused with deep red-brown towards costa; traces of a waved subterminal line with a series of black points beyond it on the veins; a fine waved dark terminal line; cilia dark red-brown, except at base, from apex to vein 2. Hind wing ochreous tinged with rufous; a slight dark line from costa beyond middle to above tornus, excurved in submedian interspace; a dark subterminal shade, extending to termen on apical area; a fine waved dark terminal line; cilia with a dark line at middle from vein 5 to submedian fold; the underside pale rufous, the terminal area irrorated with brown from apex to submedian fold.

♀. Head, thorax, and fore wing more suffused with red-brown, the last without the black spot above inner margin before the antemedial line; hind wing with the postmedial line and subterminal shade more distinct; underside of both wings yellow tinged with rufous and irrorated with brown except on inner area; fore wing with dark postmedial line and subterminal shade except on inner area; hind wing with dark postmedial line from costa to vein 2.

Ab. 1. ♀. Fore wing yellower, the markings of both wings less distinct.

Hab. Cuba, Santiago (*Schaus*), 5 ♂, 4 ♀ type. *Exp.* 40–48 millim.

7850. **Mocis bahamica**, n. sp. (Plate CCXXIII. fig. 16.)

♂. Head and thorax grey mixed with reddish brown; pectus and the fringe of hair on hind legs rufous; abdomen ochreous tinged with rufous. Fore wing grey-white irrorated with brown; antemedial line slight, red-brown defined on inner side by whitish, oblique; a minute whitish spot in middle of cell; reniform very faintly defined by brown; traces of a sinuous brown medial line, double towards inner margin; postmedial line red-brown, oblique and sinuous to above vein 6, then obliquely incurved and with series of dark points beyond it to submedian fold, then hardly traceable, curved upwards to lower edge of reniform and down to submedian fold where it is excurved; the postmedial area suffused with deep red-brown on costal area with some pale points on the costa; an indistinct pale waved subterminal line with a series of black points beyond it on the veins; a slight lunulate dark terminal line; cilia red-brown at tips from apex to vein 2. Hind wing ochreous tinged with rufous; a dark rather diffused subterminal line, diffused to termen on apical area; a fine dark terminal line; the underside ochreous tinged with rufous, the termen irrorated with brown from apex to vein 2.

♀. Head, thorax, and fore wing suffused with bright red-brown, the last with the termen greyer, the markings more distinct; hind wing redder, a dark postmedial line excurved in submedian interspace; underside of both wings yellow tinged with rufous and irrorated with brown except on inner areas and with dark postmedial line and subterminal shade from costa to vein 2.

Ab. 1. ♂. Hind wing with postmedial line.

Hab. Bahamas, Abaco (*Bonhote*), 1 ♂, Nassau (*Bonhote*), 1 ♂ type, Andros (*Neville Chamberlain*), 1 ♀. *Exp.* 50 millim.

7851. **Mocis munda**. (Plate CCXXIII. fig. 17.)

Remigia munda, Wlk. xxxiii. 1020 (1865).
Remigia diffluens, Druce, Biol. Centr.-Am., Het. i. p. 388 (part.), nec Guen.

♂. Head and thorax grey-white mixed with red-brown; tegulæ with a white line at tips, the patagia with oblique white line at middle; pectus and hind legs yellow tinged with rufous, the fore and mid tibiæ and tarsi blackish in front; abdomen ochreous tinged with rufous. Fore wing ochreous white irrorated with brown; subbasal line slight, brown, excurved below costa and ending at submedian fold; antemedial line red-brown defined on inner side by whitish, incurved, a small black spot before it above inner margin; a minute white spot defined by brown in middle of cell; reniform defined by brown and with brown striga in centre; an indistinct dark sinuous medial line, diffused above inner margin; a brown annulus below end of cell and traces of a double oblique sinuous brown line beyond the cell; postmedial line double, the inner line red-brown, the outer indistinct, excurved below costa,

then oblique; postmedial area tinged with red-brown from costa to vein 2; traces of a waved subterminal line with a series of black points beyond it on the veins and an oblique dark shade from apex; the terminal area tinged with red-brown from apex to below vein 3; a fine waved dark terminal line. Hind wing ochreous tinged with rufous; a rather diffused brown line from costa beyond middle to above tornus; a dark subterminal shade, diffused to termen on apical area; a dark terminal line; cilia yellowish. Underside of both wings ochreous tinged with rufous except on terminal areas; fore wing with broad dark subterminal shade from costa to vein 2.

Ab. 1. ♂. Fore wing suffused with violaceous grey, the lines of medial area very indistinct, the black spot above inner margin touching the antemedial line.

Ab. 2. ♂. Fore wing greyer, the hind wing rather browner.

Ab. 3. ♀. Fore wing without the black spot above inner margin before the antemedial line, a diffused fuscous patch above middle of inner margin.

Ab. 4. ♀. Fore wing redder brown; hind wing rather browner.

Ab. 5. ♀. The type. Similar but fore wing with the antemedial line almost obsolete.

Hab. Mexico, Guerrero, Venta de Zopilote (*H. H. Smith*), 1 ♀, Godman-Salvin Coll.; Cuba, Santiago (*Schaus*), 1 ♂, 2 ♀; Sta. Lucia (*Cowie*), 1 ♂, 2 ♀; St. Vincent (*H. H. Smith*), 1 ♂; Grenada (*H. H. Smith*), 2 ♀; Hab. ign., 1 ♀ type. *Exp.* 42–52 millim.

7852. **Mocis marcida.** (Plate CCXXIII. fig. 18.)

Remigia marcida, Guen. Noct. iii. p. 317 (1852); Smith, Cat. Noct. N. Am. p. 364.
Phurys perlata, Wlk. xiv. 1480 (1858).

♂. Head and thorax whitish tinged with red-brown; tegulæ white at tips; a curved white line across patagia and prothorax; pectus and legs ochreous suffused with red-brown; abdomen pale ochreous. Fore wing ochreous whitish tinged with red-brown and slightly irrorated with dark brown; the costal edge brown; subbasal line slight, brown, from costa to submedian fold; antemedial line slight, red-brown defined on inner side by whitish, excurved below costa, then oblique and slightly incurved, a small black spot before it above inner margin; orbicular a minute white spot defined by brown; reniform defined by brown and with curved brown line in centre, large; an indistinct sinuous dark medial line, double and diffused towards inner margin; postmedial line red-brown, excurved below costa, then obliquely incurved to submedian fold where it is bent inwards, then curved upwards to lower edge of reniform and down to submedian fold, then excurved, a diffused brown shade beyond it from costa to submedian fold; faint traces of a pale waved subterminal line with a series of black points beyond it on the veins; a fine slightly waved dark terminal line; cilia dark brown at tips except towards termen. Hind wing

ochreous white faintly tinged with rufous; an indistinct slightly sinuous brown postmedial line from below costa to above tornus; a brown subterminal shade; a fine brown terminal line; cilia with brown line near tips except towards tornus; the underside clothed with reddish ochreous hair to beyond middle.

♀. Rather browner. Fore wing without the black spot above inner margin before the antemedial line; hind wing on underside ochreous white slightly irrorated with fuscous.

Ab. 1. ♂. Darker.—Grand Cayman.

Hab. U.S.A., Georgia, 2 ♂, Florida (*Doubleday*), 2 ♂, 1 ♀ type *perlata*; Bermuda, Challenger Coll., 1 ♀; Grand Cayman, Georgetown (*Savage-English*), 1 ♂. *Exp.* 54–58 millim.

7853. **Mocis texana.** (Plate CCXXIII. fig. 19.)

Remigia texana, Morr. Proc. Bost. Soc. N. H. xvii. p. 219 (1874); Smith, Cat. Noct. N. Am. p. 364.
Remigia hexastylus, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 282 (1875).

♂. Head and thorax white mixed with pale red-brown; tegulæ tipped with white; a curved white line across patagia and prothorax; pectus and legs ochreous, the pectus tinged with red-brown in front, the tibiæ and tarsus suffused with brown; abdomen pale ochreous faintly tinged with red-brown. Fore wing grey-white irrorated with dark brown, the costa tinged with red-brown; subbasal line red-brown, excurved below costa and ending at submedian fold; antemedial line red-brown defined on inner side by white, erect and slightly sinuous; orbicular a minute spot defined by brown; reniform defined by brown and with brown line in centre, large; an indistinct sinuous brown medial line, excurved to the reniform; postmedial line red-brown defined on outer side by ochreous, excurved below costa, then slightly incurved to inner margin, some reddish brown suffusion beyond it, especially towards costa; traces of a pale waved subterminal line with a series of black points on its outer edge; a fine waved dark terminal line; cilia red-brown at tips, except towards tornus. Hind wing whitish tinged with red-brown and slightly irrorated with dark brown; an indistinct rather diffused brown line from costa beyond middle to above tornus, slightly incurved below discal fold; a faint brown subterminal shade; a fine dark terminal line; cilia with brown line near tips; the underside with the basal half clothed with reddish-ochreous hairs.

Hab. Canada; U.S.A., Texas, 3 ♂ type *hexastylus*. *Exp.* 54–55 millim.

7854. **Mocis disseverans.** (Plate CCXXIII. fig. 20.)

Remigia disseverans, Wlk. xiv. 1495 (1858); Smith, Cat. Noct. N. Am. p. 364.
Remigia persubtilis, Wlk. xiv. 1497 (1858).

Baratha acuta, Wlk. xxxiii. 1022 (1865).
Remigia diffluens, Druce, Biol. Centr.-Am., Het. i. p. 388 (part.), nec Guen.

♂. Head and thorax ochreous tinged with brown; pectus and legs suffused with rufous; abdomen pale brownish ochreous. Fore wing brownish ochreous irrorated with brown; antemedial line very indistinct, brown, oblique, a blackish point before it above inner margin; a minute white spot defined by brown in middle of cell; reniform tinged with fuscous, defined by fuscous, and with fuscous striga in centre; a very indistinct waved dark medial line and traces of an annulus below end of cell; postmedial line reddish brown, slight, oblique below vein 7, indistinctly double and with diffused fuscous points beyond it between veins 6 and 2; traces of a waved subterminal line, with a series of black points beyond it on the veins; an oblique fuscous shade from apex to vein 6, then between the postmedial and subterminal lines to vein 2; a fine waved dark terminal line; cilia with a brown line at middle, obsolescent towards tornus. Hind wing ochreous, faintly tinged with rufous; an indistinct dark postmedial line and fuscous subterminal shade expanding to termen at apex; a fine waved dark terminal line and slight line through the cilia; the underside ochreous tinged with rufous, a slight dark subterminal shade from costa to vein 5.

♀. Head, thorax, and fore wing tinged with rufous, the last with slight fuscous mark on the medial line at vein 1; hind wing with the postmedial line more distinct; the underside irrorated with brown except on inner area, a slight postmedial line.

Hab. U.S.A., Florida (*Doubleday*), 1 ♂ type; Mexico, Guerrero (*H. H. Smith*), 2 ♂, Vera Cruz (*Godman*), 1 ♂; Honduras (*Dyson*), 1 ♂; Panama, Chiriqui (*Ribbé*), 1 ♀, Godman-Salvin Coll.; Jamaica (*Gosse*, *Cockerell*, *Kaye*), 6 ♂, 1 ♀; Haiti (*Tweedie*), 2 ♂, 2 ♀ type *persubtilis*; Grenada (*H. H. Smith*), 1 ♂; Brazil, Amazons, Santarem (*Austen*), 1 ♂; Hab. ign., 1 ♀ type *acuta*. *Exp.* 44–52 millim.

7855. **Mocis repanda.**

Noctua repanda, Fabr. Ent. Syst. iii. 2, p. 49 (1794); Boisd. Faun. Ent. Madag. p. 107, pl. 13. f. 3.
Noctua punctularis, Hübn. Eur. Schmett., Noct. f. 364 (1808).
Remigia latipes, Guen. Noct. iii. p. 314 (1852); Druce, Biol. Centr.-Am., Het. i. p. 388 (part.); Smith, Cat. Noct. N. Am. p. 363.
Ophiusa delinquens, Wlk. xiv. 1423 (1858).
Remigia exscindens, Wlk. xiv. 1500 (1858).
Remigia subtilis, Wlk. xiv. 1501 (1858).
Remigia conveniens, Wlk. xiv. 1507 (1858).
Remigia collata, Wlk. xxxiii. 1010 (1865).
Remigia detersa, Wlk. xxxiii. 1012 (1865).
Remigia indentata, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 282 (1875).
Remigia diffluens, Druce, Biol. Centr.-Am., Het. i. p. 388 (part.), nec Guen.

Head and thorax grey suffused with brown; pectus and femora with some ochreous hair; abdomen grey tinged with brown. Fore

wing grey suffused and irrorated with brown; subbasal line slight, brown, from costa to submedian fold; antemedial line brown, slightly excurved below costa and with black spot on it above inner margin; a whitish point defined by brown in middle of cell; reniform defined by brown and with brown striga in centre; two indistinct sinuous brown medial lines; a brown annulus below end of cell, sometimes touching the postmedial line and traces of an oblique waved line beyond the cell; postmedial line red-brown, excurved below the costa, then oblique and slightly sinuous; the postmedial area suffused with brown from costa to vein 2; traces of a pale waved subterminal line with a series of black points beyond it on the veins, the terminal area with some brown suffusion at middle; a fine waved dark terminal line. Hind wing grey suffused with brown; a rather diffused brown line from costa beyond middle to above tornus; a dark subterminal shade, diffused to termen on apical area; a fine waved dark terminal line.

Ab. 1. ♂. *indentata.* Fore wing with the postmedial line obsolescent at middle and connected with the annulus below end of cell.

Ab. 2. ♀. Fore wing redder, the medial lines with some fuscous suffusion above inner margin, the postmedial area suffused with fuscous.

Ab. 3. ♀. Fore wing more purple-brown and without black point before the antemedial line.

Ab. 4. ♂. Fore wing with the point developed into a spot on or before the antemedial line.

Ab. 5. ♀. *latipes.* Fore wing more ochreous brown.

Hab. LABRADOR; CANADA, 1 ♂; U.S.A., East of Rocky Mts., Florida, Texas, 2 ♂, 1 ♀ type *indentata*; MEXICO, Vera Cruz, Cordova (*Rümeli*), 1 ♂, 1 ♀, Mexico City (*Hoege*), 2 ♀, Guerrero, R. Papagaio (*H. H. Smith*), 1 ♀, Acapulco (*H. H. Smith*), 2 ♂, Rincon (*H. H. Smith*), 1 ♂, 1 ♀, Dos Arroyas (*H. H. Smith*), 2 ♀, Tierra Colorada (*H. H. Smith*), 1 ♂, Venta de Zopilote (*H. H. Smith*), 1 ♂, 3 ♀, Jalapa (*Trujillo*), 2 ♂, 1 ♀, Tabasco, Teapa (*H. H. Smith*), 2 ♀, Jalisco, Lake Chapala (*Richardson*), 2 ♂; BR. HONDURAS, Belize (*Blancaneaux*), 2 ♀; GUATEMALA, San Geronimo (*Champion*), 1 ♂, 1 ♀, Vera Paz, Cubilguitz (*Champion*), 1 ♂, Cerro Zunil (*Champion*), 1 ♂, Balhen (*Champion*), 1 ♀, Cahabon (*Champion*), 1 ♀, Volcan de Atitlan (*Champion*), 1 ♀, Guatemala City (*Rodriguez*), 1 ♀, Volcan de Sta. Maria (*Richardson*), 1 ♂; COSTA RICA, Rio Sucio (*Rogers*), 1 ♂, Irazu (*Rogers*), 2 ♂, 1 ♀, Candelaria Mts. (*Underwood*), 1 ♂, 2 ♀; NICARAGUA, Chontales (*Janson*), 1 ♀; PANAMA (*Tylecote*), 1 ♂, Chiriqui (*Champion, Ribbe*), 3 ♀, Bugaba (*Champion*), 5 ♂, 5 ♀, Godman-Salvin Coll., La Chorrera (*Dolby-Tyler*), 1 ♀; JAMAICA (*Kaye*), 1 ♂, Cinchona (*Fawcett*), 1 ♀; CUBA, Santiago (*Schaus*), 1 ♂, Matanzas (*Schaus*), 2 ♀; HAITI (*Tweedie*), 4 ♂, 4 ♀ type *exscindens*; STA. LUCIA (*Cowie*), 3 ♂, 6 ♀; GRENADA (*H. H. Smith*), 1 ♀; DOMINICA, 1 ♂, 1 ♀; BARBADOS (*Frampton*), 1 ♀; TRINIDAD (*Crowfoot, Kaye*), 2 ♀;

Colombia, Minca (*H. H. Smith*), 3 ♂, 2 ♀, Sierra del Libano (*H. H. Smith*), 1 ♀; Venezuela, 2 ♂, 4 ♀ type *delinquens*; Br. Guiana (*Rodway*, *Roberts*), 4 ♂; Surinam, 1 ♂, 1 ♀; Brazil, Pará (*Bates*), 2 ♂, 1 ♀ type *collata*, Santarem (*Bates*), 2 ♀ type *subtilis*, Bahia (*O. Thomas*), 1 ♂, Rio Janeiro, 1 ♂, 2 ♀, São Paulo (*D. Jones*), 2 ♀; Paraguay, Sapucay (*Foster*), 11 ♂, 6 ♀; Argentina (*Giacomelli*, *O. Thomas*), 2 ♂, 2 ♀, Goya (*Perrins*), 2 ♂; S. Trinidad (*Meade-Waldo*), 1 ♀; Sierra Leone (*Morgan*, *Foxcroft*), 2 ♀ type *detersa*; Gold Coast, Kumasi (*Whiteside*), 1 ♂, 1 ♀; S. Nigeria, Old Calabar (*Crompton*), 1 ♂, Sapele (*Sampson*), 1 ♀; N. Nigeria, Baro (*Macfie*), 1 ♀; Congo (*Curror*), 3 ♂, 1 ♀ type *conveniens*, Katanga, Kambove (*Neave*), 1 ♂; Sudan, White Nile, Gabt el Meghahid (*Dunn*), 1 ♂; Abyssinia, Atbara (*Gerrard*), 1 ♂; Br. E. Africa, Eb Urru (*Betton*), 1 ♀, Rabai (*Rogers*), 1 ♀, Nairobi (*Crawshay*), 1 ♂; Uganda, Kampala (*Scott-Elliot*), 1 ♀, Entebbe (*Minchin*), 1 ♀; Germ. E. Africa, Magila, 1 ♀; Br. C. Africa, Mlanji Boma (*Neave*), 3 ♂, 1 ♀, Rukuru R. (*Neave*), 1 ♀, Zomba (*Johnston*), 1 ♂, Chinde (*de Jersey*), 1 ♂, Chiromo (*de Jersey*), 1 ♀, Shiré Valley (*Neave*), 1 ♂; N.E. Rhodesia, Luangwa R. (*Neave*), 2 ♂, 3 ♀; Gazaland, Beira (*Sheppard*), 1 ♂, Chirinda Forest (*Marshall*), 1 ♀; Mashonaland, Salisbury (*Marshall*), 3 ♂, 3 ♀; Transvaal, Umplosi (*Grant*), 1 ♂; Zululand (*Angas*), 1 ♂; Natal, Pinetown (*Leigh*), 1 ♀, Durban (*Gueinzius*, *Gooch*, *Leigh*, *Clark*), 3 ♂, 3 ♀; Madagascar, Forêt d'Ambre (*Meade-Waldo*), 1 ♀, Antananarivo (*Toy*), 1 ♀; Comoro Is., Mayotta (*Meade-Waldo*), 1 ♂, 1 ♀; Rodriguez (*Gulliver*, *Manders*), 2 ♂; Seychelles, Felicité (*Meade-Waldo*), 1 ♀, Mahé (*Meade-Waldo*), 1 ♂; Aden (*Yerbury*, *Swinhoe*, *J. J. Walker*), 2 ♂, 3 ♀. *Exp.* 38–52 millim.

Larva. Whitish, with numerous fine brown lines; dark brown subdorsal stripes interrupted between somites 4, 5 and 5, 6 by dark bands defined by white points; the fine lines on lateral area redder; a white stigmatal line with dark brown stripe below it; two anterior pairs of prolegs absent.

7856. **Mocis diffluens.** (Plate CCXXIII. fig. 21.)

Remigia diffluens, Guen. Noct. iii. p. 318 (1852); Druce, Biol. Centr.-Am., Het. i. p. 388.
Remigia mensuralis, Wlk. xiv. 1499.

♂. Head and thorax red-brown mixed with purple-grey; pectus, legs, and hair on hind tibiæ and tarsi ochreous tinged with rufous, the fore and mid tibiæ irrorated with brown, the tarsi dark brown; abdomen brown, the ventral surface ochreous irrorated with brown. Fore wing purple-grey tinged with red-brown and with slight dark irroration; subbasal line red-brown defined on inner side by grey, from costa to submedian fold; antemedial line rather diffused, red-brown defined on inner side by grey, oblique, a black point

before it above inner margin; a minute white spot defined by brown in middle of cell; reniform defined by dark brown and with curved dark striga in centre; two brown medial lines curving apart in the cell on each side of the orbicular, approximated below the cell, then again curving apart; a brown annulus below end of cell and two slight oblique waved lines beyond the cell; postmedial line dark brown, excurved below costa, then oblique and very slightly sinuous, a patch of red-brown suffusion beyond it at middle; a patch of chocolate-brown suffusion on costal area before the indistinct double dentate subterminal line with black points on the outer line at the veins; a red-brown mark at apex and a triangular patch at middle of terminal area; a fine waved dark terminal line; cilia red-brown, paler towards tornus. Hind wing reddish brown, the terminal half greyer; a slightly sinuous brown postmedial line; a rather diffused double subterminal line expanding into a diffused patch on apical area; a fine waved dark terminal line; cilia rufous; the underside grey tinged with rufous, a diffused dark postmedial line bent inwards to costa and subterminal shade incurved below costa.

♀. Head, thorax, and fore wing rather more rufous.

Ab. 1. Fore wing with small black spot above inner margin before the antemedial line.

Hab. Mexico, Vera Cruz, Atoyac (*H. H. Smith*), 1 ♂, 1 ♀, Morelos, Cuernavaca (*H. H. Smith*), 1 ♂, Guerrero, Sierra Colorada (*H. H. Smith*), 1 ♀, Tabasco, Teapa (*H. H. Smith*), 1 ♂, 1 ♀, Jalapa (*Trujillo*), 1 ♂, Cordova, San Lorenzo (*Trujillo*), 1 ♀; Guatemala, S. Geronimo (*Champion*), 1 ♂, Zapote (*Champion*), 1 ♂, El Tumbidor (*Champion*), 1 ♀, Las Mercedes (*Champion*), 1 ♂, San Isidro (*Champion*), 1 ♂, Vera Paz, Pancina (*Champion*), 1 ♂, Volcan de Atitlan (*Champion*), 1 ♀, Guatemala City (*Rodriguez*), 1 ♂; Honduras (*Dyson*), 1 ♀ type *mensuralis*; Costa Rica, Rio Sucio (*Rogers*), 1 ♂; Panama, Chiriqui (*Champion*), 1 ♂, Godman-Salvin Coll.; Haiti (*Tweedie*), 1 ♀; Trinidad (*Hart*), 1 ♀; Colombia, Sierra del Libano (*H. H. Smith*), 1 ♀; Venezuela, 1 ♀; Br. Guiana (*Roberts*), 1 ♀, Demerara (*Rodway*), 1 ♂, 1 ♀; Brazil, Espiritu Santo, 1 ♂; Paraguay, Sapucay (*Foster*), 2 ♂. *Exp.* 40–48 millim.

Larva. D. Jones, Pr. Liverp. Soc. xxxvi. p. 376 (1882).

Food-plant, "Capim" grass. 1.

7857. Mocis frugalis.

Noctua frugalis, Fabr. Syst. Ent. p. 601 (1775); Moore, Lep. Ceyl. iii. p. 190, pl. 172. ff. 4, 4 *a*; Hmpsn. Moths Ind. ii. p. 527.
Chalciope lycopodia, Geyer, Hübner's Zutr. v. p. 25, ff. 897, 898 (1832).
Remigia translata, Wlk. xxxiii. 1015 (1865).

Head and thorax reddish brown mixed with some grey; pectus and femora with ochreous hair; legs greyish brown; abdomen ochreous suffused with brown. Fore wing greyish ochreous tinged

with reddish brown and irrorated with brown; antemedial line hardly traceable, oblique, sinuous, a black point before it above inner margin; a black point in middle of cell; reniform faintly defined by brown and with faint curved brown striga in centre; traces of an oblique sinuous brown line from lower angle of cell to inner margin; postmedial line arising from vein 7 below apex and oblique to inner margin, red-brown defined on inner side by pale ochreous; a faint slightly waved oblique grey subterminal line

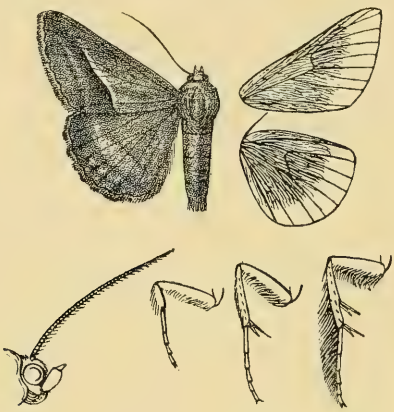


Fig. 23.—*Mocis frugalis*, ♂. ½.

with a series of black points at the veins; a faint oblique dark shade from apex; a fine waved dark terminal line; cilia with brown line at middle except towards tornus. Hind wing greyish suffused with brown; a brown postmedial line slightly excurved at discal fold; a double diffused subterminal line expanding into a diffused patch on apical area; a slight brown terminal line; cilia with a brown line at middle except towards tornus; the underside silky grey-brown with a fine dark terminal line.

Ab. 1. Fore wing with black suffusion above middle of vein 1 and beyond the postmedial line.

Hab. S. Nigeria, Lagos, Ebute Meta (*Boag*), 1 ♂, 1 ♀, Old Calabar (*Cockburn*, *Crompton*), 3 ♀, Sapele (*Sampson*), 2 ♂; N. Nigeria, Zungeru (*Simpson*), 1 ♂; Congo (*Curror*), 1 ♂; Up. Egypt; Sudan, Port Sudan (*Mrs. Waterfield*), 1 ♂, 1 ♀; Br. C. Africa, Mlangi Boma (*Neave*), 1 ♀, Fort Maguire (*Neave*), 2 ♂, Matope (*de Jersey*), 1 ♂, Ruo Valley (*Neave*), 2 ♀, Lr. Shiré Valley (*Neave*), 2 ♂, 1 ♀; N.E. Rhodesia, Luangwa R. (*Neave*), 1 ♂; Natal, Durban (*Gooch*, *Clark*, *Leigh*), 1 ♂, 2 ♀; Madagascar, Ellongo (*Bartlett*), 1 ♀; Comoro Is., Mayotta (*Meade-Waldo*), 2 ♀; Mauritius (*Manders*), 1 ♀; Aden (*Yerbury*), 1 ♂, Shaik Othman (*O.*

Grant), 1 ♂; Loo-choo Is. (*Pryer*), 2 ♂; Formosa (*Dickson*), 1 ♀, Takow (*Hobson*), 1 ♂; Punjab, Kulu, Sultanpur (*G. Young*), 1 ♀, Dharmsála (*Hocking*), 2 ♂, 1 ♀, Allahabad, 1 ♀, Durbunga (*Maries*), 1 ♂; Sikhim (*Dudgeon, Möller*), 2 ♀; Assam, Silhet (*Stainsforth*), 1 ♂, Shillong (*Parish*), 2 ♂, 2 ♀; Bengal, Calcutta, 1 ♂; Sind, Karáchi (*Swinhoe*), 2 ♂; Bombay, 1 ♀, Ratnagiri (*Jayaker*), 1 ♂, 1 ♀, Poona (*Swinhoe*), 1 ♀, Deccan, 1 ♂, Kanara (*Ward*), 1 ♀; Madras, Cuddapah (*Campbell*), 1 ♂, Nilgiris (*Hampson*), 2 ♂, 1 ♀; Ceylon, Colombo (*Nietner, Meade-Waldo*), 3 ♂, 3 ♀ type *translata*, Trincomali (*Yerbury*), 2 ♀; Burma, Moulmein (*Clerk*), 2 ♀, Rangoon (*Noble*), 1 ♂; Andamans (*Rogers*), 2 ♂, 2 ♀; Nicobars (*Rogers*), 1 ♀, Nancowrie, 1 ♀; Perak (*Ridley*), 1 ♀; Singapore (*Ridley*), 5 ♂, 4 ♀; Sumatra, 1 ♂; Borneo, 1 ♂, Sarawak (*Wallace*), 2 ♀; Java (*Horsfield*), 1 ♂, 1 ♀; Cocos-Keeling I. (*Wood-Jones*), 1 ♂, 1 ♀; Br. N. Guinea, Dinawa (*Pratt*), 3 ♂, 1 ♀; N. Australia, Port Darwin (*Buckland*), 1 ♂, Adelaide R. (*J. J. Walker*), 1 ♂, 1 ♀; Queensland, Thursday I. (*Mathew*), 1 ♀, Brisbane (*Turner*), 1 ♂; Caroline Is. (*Holden*), 1 ♂; Marshall Is. (*Mathew*), 1 ♂, 2 ♀; Gilbert Is. (*Woodford*), 3 ♀, Apia (*de la Garde*), 1 ♀; Ellice Is. (*Mathew*), 1 ♂, 4 ♀; Fiji (*Mathew*), 1 ♂, 1 ♀, Suva (*de la Garde*), 1 ♂, 1 ♀; Friendly Is., Vavau (*Eclipse Exp.*), 1 ♂, Tutuila I. (*Nicholl*), 1 ♀; Cooks Is., Raratonga (*de la Garde*), 1 ♂, 1 ♀; Society Is., Kap-a (*J. J. Walker*), 1 ♂, Tahiti (*de la Garde*), 1 ♀; Marquesas (*J. J. Walker*), 1 ♂, Paton-hiva I. (*J. J. Walker*), 1 ♂, O-hiva-Oa I. (*J. J. Walker*), 1 ♀. *Exp.* 32–50 millim.

Larva. Semp. Reise Phil., Schmett. ii. p. 564, pl. T. f. 2.

Ochreous with numerous fine waved red-brown lines, the subdorsal, lateral, and sublateral stripes with black-brown lines; maculate black dorsal bands between the 5th and 6th and 7th and 8th somites; a yellow stripe below the stigmata and ventral stripe; first two pairs of claspers absent. Food-plant, *Zingiberaceæ*.

7858. **Mocis vitiensis**, n. sp. (Plate CCXXIII. fig. 22.)

♂. Head and thorax greyish ochreous suffused with brown; pectus and legs ochreous slightly tinged with rufous, the fore and mid tibiæ and tarsi grey-brown; abdomen pale ochreous. Fore wing pale ochreous sparsely irrorated with brown, the terminal area somewhat greyer, the costa tinged with grey-brown; antemedial line slight, brown, somewhat excurved to median nervure, then obliquely incurved, a black point before it above inner margin; a minute whitish spot defined by blackish in middle of cell; reniform faintly defined by red-brown and with faint curved brown striga in centre; traces of an oblique sinuous brown medial line; a slight red-brown annulus below end of cell with a minute black spot below it; postmedial line faint red-brown and

excurved below costa, then strong, blackish, oblique, with red-brown suffusion beyond it; traces of a slightly waved subterminal line with a series of black points at the veins; an oblique brown shade from apex; a fine waved dark terminal line. Hind wing pale ochreous; a strong dark brown postmedial line; the terminal area tinged with greyish brown and with fuscous suffusion at apex; a slight brown terminal line; the underside pale yellow tinged with rufous, the terminal area brownish grey.

Hab. Fiji (*Mathew*), 1 ♂ type. *Exp.* 48 millim.

*b*¹. Wings of male not clothed with silky hair on underside.

7859. **Mocis paraguayica**, n. sp.

♂. Head and thorax grey-white faintly tinged with brown; palpi, pectus, and legs rather browner; abdomen brownish white. Fore wing grey-white irrorated with dark brown; a black point in middle of cell; reniform faintly defined by red-brown; postmedial

Fig. 24.—*Mocis paraguayica*, ♂. ½.

line red-brown defined on inner side by whitish, obsolescent and excurved below costa, then strong, oblique and almost straight, the area beyond it faintly tinged with brown; a faint oblique subterminal line with series of minute black spots at the veins; cilia whitish with strong black-brown line at middle except towards tornus. Hind wing white, the terminal area slightly irrorated with brown except towards tornus; traces of an oblique postmedial line between veins 5 and 2; a faint waved terminal line from apex to vein 2; cilia with a dark line at middle between discal and submedian folds; the underside with the costal area and terminal area to vein 2 irrorated with brown.

Hab. Paraguay, Sapucay (*Foster*), 1 ♂ type. *Exp.* 48 millim.

b. Hind tarsi of male not fringed with hair above.
*a*¹. (*Mocis.*) The femora, and mid and hind tibiæ of male fringed with long hair; wings on underside strongly clothed with silky hair to beyond middle.
*a*². Fore wing with the antemedial line oblique ..... *undata.*
*b*². Fore wing with the antemedial line erect ..... *trifasciata.*

7860. Mocis undata.

Noctua undata, Fabr. Syst. Ent. p. 600 (1775).
Phalæna archesia, Stoll, Cram. Pap. Exot. iii. p. 145, pl. 273. ff. F, G (1780); Moore, Lep. Ceyl. iii. p. 191, pl. 172. ff. 3, 3 *a*; Hmpsn. Moths Ind. ii. p. 526.
Phalæna virbia, Stoll, Cram. Pap. Exot. iii. p. 146, pl. 273. f. H (1780).
Ophiusa mayeri, Boisd. Faun. Ent. Madag. p. 104 (1834).
Remigia pellita, Guen. Noct. iii. p. 319 (1852).
Remigia gregalis, Guen. Noct. iii. p. 320 (1852).
Remigia mutuata, Wlk. xiv. 1505 (1858).
Remigia jugalis, Wlk. xiv. 1505 (1858).
Ophisma velata, Wlk. Journ. Linn. Soc., Zool. vii. p. 180 (1864).
Hypætra diffundens, Wlk. xxxiii. 963 (1865).
Remigia associata, Wlk. xxxiii. 1010 (1865).
Remigia inconcisa, Wlk. xxxiii. 1013 (1865).
Remigia bifasciata, Wlk. xxxiii. 1014 (1865).
Ophiusa subæneseens, Wlk. Proc. Nat. Hist. Soc. Glasg. i. p. 361, pl. vi. f. 9 (1873).

♂. Head and thorax grey suffused with brown; palpi, pectus, and legs reddish brown, the tarsi fuscous; abdomen ochreous grey tinged with brown. Fore wing purplish grey tinged with reddish brown and irrorated with dark brown; subbasal line red-brown, from costa to submedian fold; antemedial line dark red-brown with a narrow red-brown band with sinuous outer edge on its outer side, oblique; a minute brown annulus in middle of cell; reniform defined by brown and with curved brown striga in centre, large; a sinuous brown medial line, angled outwards on median nervure; the postmedial area with a red-brown shade narrowing to inner margin; postmedial line dark brown, bent outwards below costa, oblique to above vein 6, then bent inwards to discal fold, slightly excurved below vein 5, then slightly incurved to submedian fold where it is bent inwards, then curved upwards to lower edge of reniform and oblique to submedian fold, then again excurved; a very faint pale waved subterminal line with some blackish suffusion before it on costal area and black points beyond it on veins 6 to 1; the termen suffused with red-brown from apex to vein 2; a fine waved brown terminal line. Hind wing ochreous whitish, the basal half suffused with brown; a rather diffused brown postmedial line from below costa to inner margin, slightly excurved at submedian fold; a fuscous subterminal patch from costa to vein 4, followed by two diffused waved lines; some brown suffusion on middle of termen and a brown terminal line. Underside ochreous tinged with rufous; fore wing with fuscous discoidal lunule, slight waved postmedial line from below costa to discal fold, and subterminal shade expanding below vein 5 and ending at vein 1; hind wing with

slight maculate dark postmedial line and maculate subterminal shade forking towards costa.

♀. Head, thorax, and fore wing bright rufous; abdomen pale rufous; hind wing ochreous tinged with rufous; underside bright yellowish rufous, the hind wing with black discoidal lunule.

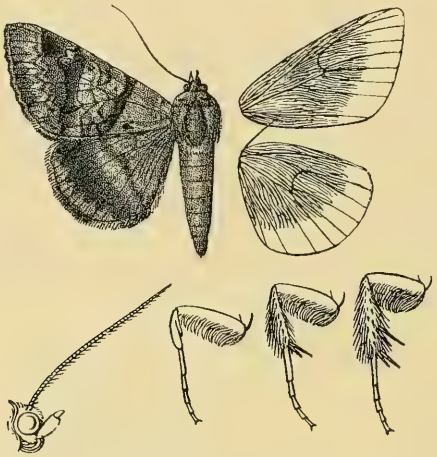


Fig. 25.—*Mocis undata*, ♂. ½.

Ab. 1. *virbia*, ♂. Fore wing with small black spot above inner margin before the antemedial line.

Ab. 2. *pellita*, ♂. Fore wing with black-brown suffusion beyond the ante- and postmedial lines.—Africa.

Ab. 3. *mayeri*. Similar but smaller.—Malagasy subregion.

Ab. 4. ♂. Fore wing with narrow black-brown bands beyond the ante- and postmedial lines.—Philippines.

Ab. 5. *gregalis*. Fore wing nearly uniform grey-brown with the markings obsolescent.—Formosa, Java.

Hab. Sierra Leone (*Foxcroft*, *Morgan*), 2 ♂, 4 ♀ types *mutuata*, *jugalis*, *diffundens*, *associata*; Gold Coast, Bibianaha (*Spurrell*), 1 ♂, Ashanti, 1 ♂; S. Nigeria, Lagos, Ebute Meta (*Boag*), 1 ♀, Old Calabar (*Crompton*), 1 ♀; N. Nigeria, Zungeru (*Simpson*), 2 ♂, 2 ♀; Cameroons, 1 ♂; Congo (*Curror*, *Marsden*), 1 ♂, 1 ♀ type *subœnescens*, Katanga, Kambove (*Neave*), 1 ♂, 1 ♀; Sudan, White Nile, Gabt-el-Meghahid (*Dunn*), 1 ♂; Uganda, Wadelai (*Emin Pasha*), 1 ♂, Ruwenzori (*Wollaston*), 1 ♂, 3 ♀; Br. E. Africa, Munisu (*Ld. Delamere*), 1 ♀, Mombasa (*de la Garde*), 1 ♀; Germ. E. Africa, Moschi, 1 ♂, Usagara (*Neave*), 1 ♀, Rusizi (*Grogan*), 1 ♀; Br. C. Africa, Mlanji Boma (*Neave*), 1 ♀, 2 ♂, L. Nyasa, Florence Bay (*Neave*), 1 ♀, Zomba (*Johnston*), 2 ♀, Blantyre (*Neave*), 1 ♂, Chinde (*de Jersey*), 2 ♂, Lr. Shire Valley (*Neave*), 1 ♂;

N.E. Rhodesia, Up. Luangwa R. (*Neave*), 1 ♀ ; Mozambique, 1 ♂ ; Mashonaland, Salisbury (*Marshall*), 2 ♂, 2 ♀ ; Umtali (*Marshall*), 1 ♀; Transvaal, Barberton (*Snooke*), 1 ♀; Natal, Durban (*Gueinzius*, *Gooch*, *Clark*, *Leigh*), 2 ♂, 2 ♀ ; Madagascar, Forêt d'Ambre (*Meade-Waldo*), 1 ♂ ; Comoro Is., Mayotta (*Meade-Waldo*), 1 ♀ ; Mauritius, 1 ♀ type *inconcisa* ; Seychelles, Mahé (*Meade-Waldo*), 2 ♂, 1 ♀, Felicité (*Meade-Waldo*), 2 ♂, 1 ♀ ; Japan, Yezo (*Carpenter*), 1 ♂, Yokohama (*Pryer*), 1 ♂, 2 ♀ ; Corea, Gensan (*Ito*), 1 ♂ ; C. China, Shanghai, 2 ♂, Chusan Is. (*J. J. Walker*), 1 ♂, 1 ♀, Kiukiang (*Pratt*), 1 ♀, Ship-y-shán (*Pratt*), 1 ♀; W. China, Chia-kou-ho (*Pratt*), 1 ♀ ; S. China, Hainan (*Whitehead*), 1 ♂, 1 ♀ ; Formosa, 1 ♂, Takow (*Hobson*), 1 ♂, 3 ♀; Punjab, Dharmsála (*Hocking*), 2 ♂, 2 ♀, Wuzeerabad (*Hearsey*), 1 ♂, 1 ♀, Kala Pani (*Yerbury*), 1 ♀, Jubbulpur (*F. Butler*), 1 ♀, Durbunga (*Maries*), 2 ♀, Allahabad, 1 ♀, Manpuri, 1 ♀ ; Assam (*Badgley*), 1 ♂, Shillong (*Parish*), 1 ♂, 1 ♀, Silhet (*Stainsforth*), 2 ♂, 2 ♀, Dibrugrah (*Ward*), 1 ♀ ; Bengal, Calcutta, 1 ♂, 1 ♀ ; Bombay, 2 ♀, Ratnagiri (*Jayaker*), 1 ♂, 1 ♀, Thanna Distr., Wangni (*Swinhoe*), 1 ♀ ; Madras, Nilgiris (*Hampson*), 2 ♂, 2 ♀ ; Travancore, Pirmád (*Mrs. Imray*), 1 ♂ ; Ceylon (*Green*), 2 ♂, 1 ♂ type *bifasciata*, Periyakulam (*Yerbury*), 1 ♀; Burma, Moulmein (*Clerk*), 1 ♂, Pegu Yoma (*Bingham*), 1 ♂ ; Andamans (*Rogers*), 1 ♂, 2 ♀ ; Nicobars (*Rogers*), 1 ♂, 1 ♀, Nancowry, 3 ♂ ; Selangore (*Meade-Waldo*), 1 ♀ ; Singapore (*Ridley*), 2 ♂, 1 ♀ ; Philippines, Taytai (*Betton*), 1 ♂, San Fernando (*McGregor*), 1 ♀ ; Nias I. (*Schreiber*), 1 ♀ ; Java (*Horsfield*), 4 ♂, 2 ♀ type *gregalis*. *Exp.* 40–56 millim.

Larva. Indian Museum Notes, v. p. 159 (1903).

Purplish brown speckled with black; lateral area yellowish with red lines ; a sublateral series of small black dots ; head with brown and red lateral streak. Food-plant, *Desmodium*.

7861. **Mocis trifasciata.** (Plate CCXXIII. fig. 23.)

Catephia trifasciata, Steph. Ill. Brit. Ent., Haust. iii. p. 128 (1829) ; Wood, Ind. Ent. pl. 17. f. 437.
Remigia demonstrans, Wlk. xiv. 1512 (1858).
Remigia discrepans, Butl. Trans. Ent. Soc. 1886, p. 415.

♂. Head and thorax purplish grey mixed with brown; pectus and legs ochreous tinged with red-brown ; abdomen ochreous grey tinged with brown. Fore wing purplish grey tinged with brown and irrorated with dark brown ; a slight sinuous brown subbasal line defined on outer side by grey, from costa to submedian fold ; antemedial line dark brown defined on inner side by grey, erect, straight, with a band of chocolate-brown suffusion beyond it ; reniform defined by brown, large ; postmedial area suffused with chocolate-brown, narrowing to inner margin ; postmedial line brown slightly defined on outer side by grey, bent outwards below costa, slightly angled inwards at vein 7, incurved at discal fold, then straight to

submedian fold, then curved upwards to lower edge of reniform and down to submedian fold, then again excurved, some pale points beyond it on costa; a subterminal series of black points on veins 6 to 1; the termen and cilia tinged with brown at middle; a fine waved brown terminal line. Hind wing grey-white suffused with brown; a diffused brown postmedial line followed by a paler band; a large fuscous brown subterminal patch on costal area followed by two diffused waved lines from vein 5 to inner margin; the termen suffused with brown at middle; a fine waved brown terminal line; cilia ochreous white, brown at base at middle; the underside ochreous white tinged with rufous, the apical area tinged with fuscous.

♀. Fore wing with the area beyond the antemedial line and the postmedial area redder brown; hind wing with the ground-colour ochreous whitish; underside yellow tinged with rufous and irrorated with brown; fore wing with blackish discoidal spot, slight postmedial line from below costa to vein 4, and subterminal patch between veins 5 and 1; hind wing with black discoidal point, minutely waved postmedial line and faint subterminal shade forking towards costa.

Ab. 1. ♂. Fore wing more uniform grey-brown, the markings indistinct and without the ante- and postmedial diffused bands.

Ab. 2. ♀ *discrepans*. Fore wing more uniform reddish brown, the markings indistinct except a narrow black-brown antemedial band from below costa to inner margin, without the ante- and postmedial diffused bands.

Hab. Ceram (*Wallace*), 1 ♂; Br. N. Guinea (*Mathew*), 1 ♂, Dinawa (*Pratt*), 3 ♂, 2 ♀, Mt. Kebea (*Pratt*), 1 ♂, 1 ♀; D'Entrecasteaux Is. Fergusson I (*Meek*), 1 ♂, 1 ♀; Solomon Is., Pentecost (*Woodford*), 1 ♀; N. Australia, Port Darwin; Fiji (*Mathew*), 3 ♂, 2 ♀ type *discrepans*, Suva (*de la Garde*), 2 ♀; Navigators Is. (*Duke of Northumberland*), 2 ♂ type *demonstrans*; Friendly Is., Vavau (*Eclipse Exp.*), 3 ♂, Tutuila I. (*Nicholl*), 1 ♀, Tongatabu (*Lister*), 1 ♀; Tonga (*Mathew*), 1 ♂; Tahiti (*J. J. Walker*), 2 ♀; Marquesas (*J. J. Walker*), 1 ♂, 2 ♀; Hab. ign., 1 ♂ type. *Exp.* 48–56 millim.

B. Mid tibiæ of male smoothly scaled, the hind tibiæ fringed with long hair above only; underside of wings clothed with silky hair to beyond middle.
- *a*. Hind wing whitish suffused in parts with brown ..... *alterna*.
- *b*. Hind wing grey strongly suffused with brown.
  - a^1. Fore wing without prominent dark shades beyond the antemedial and before the subterminal line.
    - a^2. Fore wing with the antemedial line slightly oblique and sinuous ..... *dolosa*.
    - b^2. Fore wing with the antemedial line slightly excurved below costa, then almost erect ..... *mutuaria*.
  - b^1. Fore wing with prominent dark shades beyond the antemedial and before the subterminal line ..... *inferna*.

7862. **Mocis alterna.** (Plate CCXXIII. fig. 24.)

Euclidia alterna, Wlk. xv. 1833 (1858).
Pseudophia nebuligera, Butl. Trans. Ent. Soc. 1886, p. 413.

♂. Head and thorax pale grey mixed with brown; pectus and legs whitish tinged with rufous, the fore and mid tibiæ and tarsi suffused with brown; abdomen whitish dorsally irrorated with brown. Fore wing whitish irrorated with brown; subbasal line black-brown, slightly excurved below costa and ending at submedian fold; antemedial line strong, black-brown defined on inner side by white, oblique and slightly sinuous; an indistinct sinuous brown medial line; reniform defined by brown and with bifid black patch beyond it before the postmedial line, which is dark brown defined on outer side by white, bent outwards below costa, bent inwards at vein 6 and angled inwards at discal fold, then slightly sinuous to vein 2 where it is sharply curved upwards to lower edge of reniform and down to submedian fold, then again excurved; two white points on costa on the prominent reddish brown shade before the minutely waved white subterminal line; the termen tinged with brown at middle; a fine waved dark terminal line; cilia whitish tinged with brown. Hind wing whitish tinged with brown, the terminal area suffused with dark brown; a rather diffused slightly sinuous dark postmedial line; a whitish subterminal line; a blackish patch at middle of termen with some whitish above and below it; a waved blackish terminal line; cilia white tinged with brown at middle. Underside of both wings white tinged with rufous on basal half, slight black discoidal lunules, dark postmedial lines excurved below costa, diffused subterminal lines excurved below costa and some dark suffusion at apex and middle of terminal areas.

♀. Much more uniformly suffused with brown; fore wing with the ante- and postmedial lines slight but prominently defined by white, no black patch beyond the reniform or dark shade before the subterminal line.

Ab. 1. ♀ *nebuligera*. Fore wing paler grey-brown.

Hab. Br. N. Guinea, Sogeri, 1 ♂, Port Moresby, 1 ♂; N. Australia (*Elsey*), 1 ♂ type, Port Darwin (*Buckland*), 3 ♂, 1 ♀; Alexandria (*Stalker*), 2 ♂, 1 ♀; W. Australia, Sherlock R. (*Clements*), 2 ♂, 1 ♀; Queensland, Peak Downs, 1 ♀ type *nebuligera*, Brisbane (*Turner*), 1 ♂, 1 ♀. *Exp.* 32–42 millim.

7863. **Mocis dolosa.**

Plecoptera dolosa, Butl. P. Z. S. 1880, p. 678.
Remigia nigrisigna, Leech, P. Z. S. 1889, p. 553, pl. lii. f. 3.

♂. Head and thorax pale grey mixed with brown; pectus, legs, and abdomen whitish suffused with brown. Fore wing pale grey tinged and thickly irrorated with reddish brown; a slight sinuous black subbasal line from costa to submedian fold; antemedial line red-brown defined on inner side by whitish, slightly excurved below

costa, then oblique, a minute black spot before it above inner margin, and a sinuous brown shade beyond it; reniform defined by brown, with brown bar in centre and rather bifid black-brown mark beyond it before the postmedial line, which is brown slightly defined on outer side by whitish, bent outwards below costa, at vein 6 bent inwards and angled inwards at discal fold, nearly straight to just above vein 2, then curved upwards to lower edge of reniform and down to submedian fold, then again excurved; an indistinct pale dentate subterminal line slightly defined on each side by brown and with some black-brown before it on costal area; the terminal area with some brown suffusion except towards tornus; a fine waved brown terminal line; cilia whitish tinged with brown. Hind wing grey-white suffused with brown; a rather diffused slightly sinuous dark postmedial line; a brown subterminal shade with the slightly waved whitish subterminal line on it; some dark brown at middle of termen; cilia whitish tinged with red-brown; the underside with the basal half whitish tinged with rufous, a dark discoidal lunule.

♀. Fore wing without the blackish patch beyond the reniform, the postmedial line less angled inwards at discal fold, then sinuous to vein 2, a brown shade before the subterminal line but without blackish towards costa.

Ab. 1. *nigrisigna*. Fore wing with the antemedial line slightly sinuous.

Hab. Japan, Satsuma (*Leech*), 1 ♂ type *nigrisigna*, Kiushiu, 1 ♀; N. China, Pekin (*B. Fletcher*), 1 ♀; Centr. China, Shanghai (*Pryer*), 1 ♀, Chekiang (*Pryer*), 1 ♀; Formosa, Takow (*Hobson*), 1 ♂, 3 ♀ type. *Exp.* 32–40 millim.

7864. **Mocis mutuaria.**

Remigia mutuaria, Wlk. xiv. 1506 (1858), ♀.
Ophiusa judicans, Wlk. xv. 1831 (1858) ♂.
Remigia torpida, Wlk. xxxiii. 1013 (1865).
Grammodes insulsa, Wllgrn. Wien. Ent. Mon. iv. p. 173 (1860).
Ophiusa nigrimacula, Mab. Ann. Soc. Ent. Fr. (5) ix. p. 347 (1879).

♂. Head and thorax purplish grey mixed with brown; abdomen grey suffused with brown, the ventral surface whitish irrorated with brown. Fore wing purplish grey tinged with brown and thickly irrorated with dark brown; subbasal line slight, brown defined on outer side by grey, curved, from costa to submedian fold; antemedial line chocolate-brown defined on inner side by grey, very slightly excurved below costa, then slightly oblique, a black point before it above inner margin; reniform large, defined at sides by brown and with bifid black mark beyond it before the postmedial line, which is brown, bent outwards below costa, bent inwards at vein 6 and angled inwards at discal fold, then obliquely curved to submedian fold, then curved upwards to lower edge of reniform and down to submedian fold, then again excurved; an indistinct dentate grey subterminal line with black spots before it, above and below vein 7, then defined on inner side by a slight dark shade; cilia

whitish suffused with brown. Hind wing grey suffused with brown; an indistinct dark postmedial line and double diffused subterminal line; cilia whitish suffused with brown; the underside with the basal half tinged with rufous, the terminal half grey tinged and irrorated with brown.

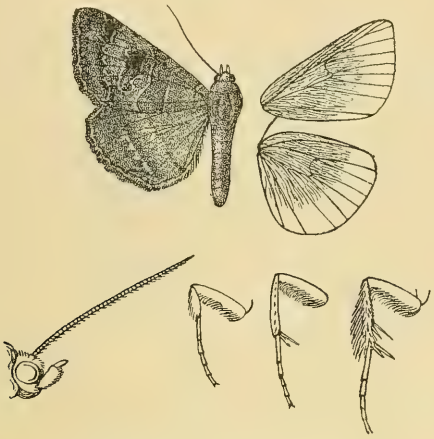


Fig. 26.—*Mocis mutuaria*, ♂. ½.

♀. Fore wing without the antemedial black point above inner margin, a sinuous medial line, the reniform wholly defined by brown and without the bifid black mark beyond it, a prominent dark shade before the subterminal line, but without the black spots above and below vein 7; hind wing on underside wholly grey suffused and irrorated with brown, a diffused sinuous postmedial line and faint subterminal shade.

Ab. 1. ♀. Fore wing with fuscous patch beyond the postmedial line at discal fold.

Hab. N. Nigeria, Bauchi Prov., Panyam (*Fox*), 1 ♀; Congo, Katanga, Kambove (*Neave*), 1 ♂; Br. E. Africa, Nairobi (*Crawshay*), 2 ♂, 2 ♀, Machakos (*Crawshay*), 1 ♂, 1 ♀; Uganda, Entebbe (*Minchin*), 1 ♂, 1 ♀, Mulema (*Doggett*), 1 ♀; Br. C. Africa, Mlanji Boma (*Neave*), 1 ♂, Fort Mangoche (*Neave*), 1 ♀, Rukuru R. (*Neave*), 2 ♀, Zomba (*Johnston*), 2 ♂, 1 ♀; N.E. Rhodesia, L. Bangweolo (*Neave*), 1 ♀, Fort Jameson (*Neave*), 1 ♀, Luangwa R. (*Neave*), 1 ♂, Serenje Distr. (*Neave*), 1 ♂, Kasama Distr. (*Harger*), 1 ♀; Angoniland, Lilongwe Distr. (*Neave*), 1 ♀; Gazaland, Chirinda Forest (*Marshall*), 1 ♀; Mozambique (*Muir*), 1 ♂; Mashonaland, Salisbury (*Marshall*), 9 ♂, 6 ♀; Transvaal, Masit Nek, 1 ♀, Kanuo (*Cooke*), 1 ♂; Natal, Karkloof (*Marshall*), 1 ♂, 1 ♀, Estcourt (*Hutchinson*), 1 ♀, Duffs Road (*Thorne*), 2 ♂, Durban (*Gueinzius*, *Gooch*), 7 ♂, 2 ♀ type *judicans*; Pondoland (*Swinny*),

1 ♀ ; Cape Colony (*Drege*, *Sir A. Smith*), 1 ♂, 2 ♀ type and type *torpida* ; Madagascar, type † ♂ *nigrimacula* in Coll. Mabille. *Exp.* 40–44 millim.

7865. **Mocis inferna.** (Plate CCXXIII. fig. 25.)

Remigia inferna, Leech, Trans. Ent. Soc. 1900, p. 565.

Head and thorax purplish grey mixed with chocolate-brown ; abdomen purplish grey tinged with brown, the ventral surface whitish irrorated with brown. Fore wing purplish grey tinged and irrorated with brown ; subbasal line chocolate-brown, slightly excurved below costa and ending at submedian fold ; antemedial line strong, deep chocolate-brown slightly defined on inner side by pale grey, oblique, slightly bent outwards to inner margin, a small black spot before it above inner margin, a broad band of brown suffusion beyond it ; reniform defined by brown, elliptical, a rather bifid chocolate-brown patch beyond it before the postmedial line, which is chocolate-brown slightly defined on outer side by pale grey, bent outwards below costa, incurved at discal fold, at vein 2 curved upwards to lower edge of reniform and down to submedian fold, then again excurved ; the postmedial area suffused with chocolate-brown to the indistinct oblique subterminal line, somewhat dentate and produced to short dark streaks on veins 6 to 1 ; the termen suffused with chocolate-brown from apex to vein 3 ; a fine waved dark terminal line ; cilia with a brownish line near base. Hind wing greyish suffused with brown ; an oblique diffused dark postmedial line, excurved below vein 2 ; the terminal area darker with some grey before the waved dark terminal line except towards tornus. Underside greyish suffused with brown ; both wings with diffused postmedial line excurved below costa of hind wing, and the terminal area darker.

Hab. W. China, Huang-mu-chang (*Pratt*), 1 ♂ type, Washan (*Pratt*), 1 ♀, Pu-tsu-fang, 1 ♀, Chow-pin-sa, 1 ♀. *Exp.* 44–46 millim.

C. Tibiæ of male smoothly scaled, wings on underside slightly clothed with silky hair to beyond middle.
  a. Palpi with the 3rd joint long.
    a^1. Fore wing with the postmedial line retracted to lower angle of cell and to the antemedial line at vein 1 ... *persinuosa*.
    b^1. Fore wing with the postmedial line reaching inner margin ..... *inornata*.

7866. **Mocis persinuosa.**

Remigia persinuosa, Hmpsn. P. Z. S. 1910, p. 425, pl. xxxvii. f. 16.

♂. Head and thorax brownish grey with a few fuscous scales ; palpi with the 2nd joint blackish at sides ; fore and mid tibiæ and tarsi blackish, the tarsi with pale rings ; abdomen brownish grey slightly irrorated with black and dorsally tinged with fuscous except

at base. Fore wing brownish grey slightly irrorated with black; a black discoidal point; postmedial line slight, black, outwardly oblique from below costa to vein 6, then inwardly oblique, slightly excurved from vein 5 to below 3, then incurved to below middle of cell, then stronger and angled outwards at vein 1, then bent upwards to submedian fold before middle where it terminates in a minute angle; an oblique rather diffused black streak from apex to vein 4 just beyond postmedial line, with two small obscure black spots on it below apex; a subterminal series of slight black marks from below apex to submedian fold where the mark is further from

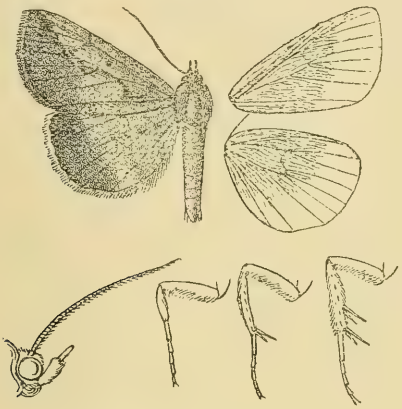


Fig. 27.—*Mocis persinuosa*, ♂. ½.

termen; a terminal series of black points. Hind wing greyish tinged with brown; traces of an oblique fuscous postmedial line; a large fuscous apical patch and faint subterminal shade; a terminal series of black points except towards tornus. Underside of both wings with small discoidal blackish spot, obliquely curved diffused postmedial line except on inner area; fore wing with subterminal shade expanding into a patch below middle; hind wing with faint subterminal shade.

♀. Fore wing with the markings obsolescent.

Hab. Congo, Katanga, Kambove (*Neave*), 2 ♂ type; N.W. Rhodesia, Kapopo (*Neave*). *Exp.* 48 millim.

*7867. **Mocis inornata.** (Plate CCXXIII. fig. 26.)

Trigonodes inornata, Holl. Psyche, vii. p. 86, pl. ii. f. 19 (1894).

♂. Grey tinged with reddish brown and with dark red-brown patches on vertex of head and at middle of tegulæ; palpi red-brown, the 3rd joint greyish above; fore and mid legs red-brown in front; pectus, hind legs and ventral surface of abdomen ochreous white. Fore wing grey tinged with red-brown and irrorated with dark

brown; a blackish discoidal point and indistinct sinuous brown line from lower angle of cell to inner margin; postmedial line brown with red-brown suffusion on its inner side, obliquely downcurved from costa to vein 6 where it is met by an oblique red-brown shade from apex, enclosing a whitish patch on costal area, then oblique, waved; a subterminal series of diffused brown spots, the spot below vein 4 nearer the postmedial line; a terminal series of blackish lunules. Hind wing ochreous grey suffused with red-brown; a diffused subterminal brown shade extending to termen from apex to vein 4; a terminal series of small blackish spots; the underside silky brownish ochreous with diffused curved medial line from costa to vein 2 and brown shade on costa at apex.

Hab. GABOON, Ogowé R., type † ♂ in Coll. Holland. *Exp.* 50 millim.

b. Palpi with the 3rd joint moderate.
  a^1. Fore wing with the postmedial line not retracted at submedian fold, or forming a sinus below end of cell.
    a^2. Fore wing without annulus below end of cell.
      a^3. Fore wing with dark streaks on median nervure and base of veins 5 to 2 ..... *ramifera.*
      b^3. Fore wing with indistinct double oblique line from beyond upper angle of cell angled inwards to origin of vein 2 and ending above an antemedial black spot above inner margin ..... *diplocyma.*
      c^3. Fore wing with indistinct double oblique waved line beyond the cell before a faint pale postmedial shade ..... *undifera.*
      d^3. Fore wing with oblique dark line beyond the cell before the subterminal line ..... *escondida.*
    b^2. Fore wing with annulus below end of cell.
      a^3. Fore wing with the ante- and postmedial lines confluent above inner margin ..... *propugnata.*
      b^3. Fore wing with the ante- and postmedial lines not confluent above inner margin ..... *annetta.*
  b^1. Fore wing with the postmedial line retracted at submedian fold and forming a sinus below end of cell.
    a^2. Fore wing with the antemedial line oblique ..... *laxa.*
    b^2. Fore wing with the antemedial line almost erect ... *discios.*

7868. **Mocis ramifera**, n. sp. (Plate CCXXIII. fig. 27.)

♂. Head, thorax, and abdomen ochreous slightly tinged with rufous; palpi, pectus, and legs more strongly tinged with rufous, the fore tibiæ in front and the tarsi red-brown. Fore wing ochreous irrorated with brown; a brown streak on median nervure forking on base of veins 2 to 5 and with some rufous suffusion below it; a brown streak on vein 1 with some rufous suffusion above and below it; postmedial line brown with some rufous suffusion beyond it, arising at vein 6, oblique, bent inwards below vein 1; a subterminal series of small black spots on the veins with a whitish line before them; a slight waved brown terminal line. Hind wing pale ochreous with a reddish brown subterminal shade,

diffused to termen on apical area; a fine brown terminal line; the underside pale ochreous with the costal area and terminal area to vein 2 tinged with rufous.

♀. Fore wing with the postmedial line angled inwards at vein 2; hind wing tinged with brown.

Hab. Peru, Callao (*J. J. Walker*), 1 ♂, 1 ♀ type. *Exp.* 44 millim.

7869. **Mocis diplocyma**, n. sp. (Plate CCXXIII. fig. 28.)

♀. Head and thorax ochreous slightly tinged with brown; palpi and legs tinged with rufous; abdomen ochreous. Fore wing ochreous sparsely irrorated with black scales; a small black spot above inner margin before middle; an oblique reddish brown streak from discal fold beyond the cell along median nervure to origin of vein 2; an ill-defined oblique waved red-brown line from vein 7 beyond the cell to submedian fold, then bent inwards as an oblique streak to above the antemedial black spot; postmedial line red-brown, arising at vein 7 below apex and oblique to vein 1, a diffused brown shade beyond it extending to inner margin; an indistinct pale subterminal line defined on outer side by reddish brown with slight points of black scales at the veins; cilia reddish brown at tips from apex to vein 2. Hind wing pale ochreous faintly tinged with rufous and irrorated with blackish scales on terminal half; a brown subterminal shade; the underside with the costal area and terminal area to vein 2 faintly tinged with rufous and irrorated with blackish scales.

Hab. Brazil, Amazons, Parantins (*Austen*), 1 ♀ type. *Exp.* 44 millim.

7870. **Mocis undifera**, n. sp. (Plate CCXXIII. fig. 29.)

♀. Head and thorax grey suffused with reddish brown; abdomen greyish ochreous. Fore wing grey suffused with reddish brown; traces of an oblique sinuous antemedial line with a black point before it above inner margin; a very indistinct waved medial line; two very indistinct oblique slightly waved lines beyond the cell followed by a faint pale postmedial shade with slight dark marks on its outer edge at the veins; a subterminal series of black points on the veins; a fine waved dark terminal line. Hind wing greyish ochreous tinged with reddish brown; the underside with the costal area and terminal area to vein 2 tinged with rufous.

Hab. Ecuador, Guayaquil (*Dolby-Tyler*), 1 ♀ type. *Exp.* 42 millim.

*7871. **Mocis escondida**. (Plate CCXXIII. fig. 30.)

Phurys escondida, Schaus, A. M. N. H. (7) viii. p. 84 (1901).

♀. Head and thorax pale reddish brown mixed with grey; abdomen ochreous brown. Fore wing red-brown thickly irrorated with grey; an oblique red-brown postmedial line from below costa

to middle of submedian fold; an oblique diffused subterminal red-brown line from below apex to vein 1 with traces of another line beyond it; a fine brown terminal line. Hind wing ochreous tinged with brown; a diffused subterminal brown shade somewhat oblique below vein 5 and ending at vein 2; a fine brown terminal line; the underside whitish irrorated with brown.

Hab. Brazil, Castro Paraña (*D. Jones*), type † ♀ in the U.S. Nat. Mus. *Exp.* 36 millim.

7872. **Mocis propugnata.** (Plate CCXXIII. fig. 31.)

Remigia propugnata, Leech, Trans. Ent. Soc. 1900, p. 566.

♂. Head and thorax chocolate-brown mixed with grey-white; frons with curved white line above; tegulæ white at tips; patagia with oblique white line near base; pectus and legs red-brown; abdomen grey suffused with reddish brown. Fore wing purplish grey tinged with brown and irrorated with chocolate-brown, the terminal area paler; subbasal line indistinct, pale defined on each side by brown, curved, from costa to submedian fold; a round black spot defined by whitish above inner margin before middle; antemedial line dark slightly defined on inner side by whitish and with a chocolate-brown band on its outer side, excurved below costa, strongly angled inwards above vein 1, the band forming a conical patch in submedian interspace, above inner margin curved outwards to join the postmedial line; a brown medial line, oblique to median nervure and angled outwards in submedian fold; reniform defined by brown except above and with curved brown striga in centre, elliptical; a brown annulus below end of cell; postmedial line dark brown slightly defined on outer side by pale grey and with chocolate-brown band before it except on costa area, excurved below costa, incurved beyond lower angle of cell, strongly excurved in submedian interspace then curving round to join the antemedial line, the chocolate-brown band before it forming rather triangular patches beyond the cell and in submedian interspace; subterminal line oblique and black-brown from costal to above vein 6 where it is produced to a short point, then rather indistinct, incurved below vein 5 and with short dark streaks beyond it on the veins; a slight brown shade before termen from costa to vein 2; a waved brown terminal line. Hind wing greyish suffused with red-brown; a faint oblique diffused postmedial line and subterminal shade; a waved dark terminal line; the underside pale greyish tinged and irrorated with brown.

Hab. W. China, Kwei-chow, 1 ♂ type, Pu-tsu-fang, 1 ♂. *Exp.* 46 millim.

7873. **Mocis annetta.**

Remigia annetta, Butl. A. M. N. H. (5) i. p. 293 (1878); id. Ill. Het. B.M. ii. p. 43, pl. 34. f. 7; Staud. Cat. Lep. pal. p. 240.

♂. Head and thorax red-brown, the patagia with slight oblique white line near base; antennæ dark brown; palpi, pectus, and the

hair on femora rufous; abdomen grey suffused with brown, the ventral surface pale irrorated with brown. Fore wing purplish grey suffused with reddish brown; a slight whitish subbasal line from costa to submedian fold, excurved at subcostal nervure; antemedial line deep chocolate-brown defined on inner side by pale grey and with chocolate-brown suffusion beyond it, oblique; an indistinct brown medial line, oblique to the reniform, then incurved, and excurved below submedian fold; reniform defined by brown, elliptical, a chocolate-brown patch beyond it; an elleptical brown annulus below end of cell; postmedial line chocolate-brown slightly defined on outer side by pale grey, bent outwards below costa and obliquely incurved below vein 6; a quadrate chocolate-brown patch on postmedial part of costa with the indistinct dentate brown subterminal line arising from its outer angle, bent outwards to tornus and with blackish points beyond it on veins 6 to 2; the termen and cilia suffused with red-brown from apex to vein 2. Hind wing greyish suffused with cupreous brown; a faint oblique postmedial line and subterminal shade. Underside of fore wing grey-brown, the costa and terminal area ochreous irrorated with brown; hind wing ochreous whitish irrorated with brown, a sinuous brown postmedial line except on inner area and faint subterminal shade.

♀. Head and thorax brighter rufous; fore wing with the brown suffusion redder; hind wing rather greyer; underside of fore wing whitish except the costal and terminal areas, a dark postmedial line and subterminal shade; hind wing with the inner area whiter.

Hab. E. Siberia, Ussuri, 1 ♂, 1 ♀, Vladivostock (*Christoph*), 1 ♀; Japan, Hakodaté, 1 ♂, Nagasáki (*Lewis*, *Leech*), 3 ♀, Fusiki (*Leech*), 1 ♀, Nikko (*Lewis*), 1 ♂, Tokio (*Maries*), 1 ♂, 1 ♀, Yokohama (*Jonas*), 1 ♂, 1 ♀ type; Corea, Gensan (*Ito*), 1 ♀; W. China, Chang-yang (*Pratt*), 1 ♀, Omei-shan, 1 ♂, Washan (*Pratt*), 1 ♀, Kia-ting-fu, 1 ♂, Kwei-chow, 1 ♂, Chow-pin-sa, 1 ♀, Chia-kou-ho (*Pratt*), 1 ♂, Ta-chien-lu (*Pratt*), 1 ♀, Moupin (*Kricheldorf*), 1 ♀. *Exp.* 44–50 millim.

7874. **Mocis laxa.**

Phurys laxa, Wlk. xiv. 1486 (1858); Hampsn. Moths Ind. ii. p. 525.
Drasteria pavona, Feld. Reis. Nov. pl. 117. f. 9 (1874).

Head, thorax, and abdomen purplish grey suffused with brown; antennæ whitish with dark rings. Fore wing purplish grey suffused with brown; a faint curved brown subbasal line from costa to submedian fold; antemedial line brown slightly defined on inner side by grey, inwardly oblique and slightly incurved, a broad chocolate-brown band beyond it except on costal area extending to beyond upper part of reniform and below the cell to the postmedial line; reniform defined by brown and with slight brown striga in centre; postmedial line dark brown, oblique from costa to submedian fold, then curved upwards to lower edge of reniform and down to submedian fold, then oblique to inner margin, a chocolate-brown band beyond it extending to inner margin and followed by brown

suffusion to the very indistinct waved brown subterminal line with slight dark points on the veins; the termen narrowly tinged with brown from apex to below vein 3; a slight waved brown terminal line and faint line at middle of cilia. Hind wing grey suffused with brown, the terminal area darker; an indistinct brown postmedial line with slightly paler band beyond it; a slight brown

Fig. 28.—*Mocis laxa*, ♂. ½.

terminal line; cilia whitish at tips; the underside with faint diffused postmedial line and subterminal shade.

Hab. Centr. China, Ichang (*Mrs. Pratt*), 1 ♀; W. China, Chang-yang (*Pratt*), 1 ♂, Moupin (*Kricheldorf*), 2 ♂; Sikhim, 3 ♀ type; Assam (*Badgley*), 1 ♂, 1 ♀, Cherra Punji, 1 ♂. *Exp.* 48–52 millim.

7875. **Mocis discios.** (Plate CCXXIII. fig. 32.)

Ophiusa discios, Koll. Hügel's Kaschmir, iv. p. 477 (1848); Hampsn. Moths Ind. ii. p. 525.

Head and thorax purplish grey mixed with brown; abdomen grey tinged with brown. Fore wing purplish grey tinged and irrorated with brown; a faint diffused brown postmedial line, excurved below costa and ending at submedian fold; antemedial line black-brown defined on inner side by pale grey, erect, straight, a band of blackish brown suffusion beyond it expanding below the cell to the postmedial line; reniform defined at sides by brown and with triangular black-brown spot beyond it; postmedial line dark brown; slightly excurved below costa, then oblique to submedian fold, then curved upwards to lower edge of reniform and down to submedian fold where it is again excurved; a band of

blackish-brown suffusion beyond it extending to inner margin and to the very indistinct dentate subterminal line with a series of blackish points on the veins; the termen tinged with brown from apex to below vein 3; a fine waved brown terminal line. Hind wing grey suffused with brown; an indistinct brown postmedial line and diffused subterminal shade; a fine brown terminal line; the underside with the postmedial line more diffused and curved.

Hab. Punjab (*Read*, *Magee*), 2 ♂, Kulu, Sultanpur (*G. Young*), 1 ♂, 1 ♀, Simla (*Harford*), 3 ♀, Masuri (*Lang*), 1 ♀, Dharmsála (*Hocking*), 5 ♂, 2 ♀. *Exp.* 44–50 millim.

Genus **PHURYS.**

Crochiphora, Hübn. Zutr. Samml. exot. Schmett. iii. p. 35 (1825), non. descr. ..... Type. *flavistriaria.*
Phurys, Guen. Noct. iii. p. 303 (1852) ..... *vinculum.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd long; frons smooth, without tuft of hair; eyes large, round; antennæ of male ciliated; thorax clothed almost entirely with scales and without crests; femora and tibiæ of male typically fringed with long hair, in female smoothly scaled; the fore tibiæ not spined, the hind tibiæ spined; abdomen smoothly scaled and without crests. Fore wing with the apex somewhat produced and acute, the termen evenly curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about about one-third length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. (*Phurys.*) Femora and tibiæ of male fringed with long hair.

A. Fore wing with the ground-colour leaden grey ..... *vinculum.*
B. Fore wing with the ground-colour ochreous ..... *immunis.*

7876. Phurys vinculum.

Phurys vinculum, Guen. Noct. iii. p. 304 (1852); Smith, Cat. Noct. N. Am. p. 357.

Head and thorax glossy leaden grey tinged with brown; antennæ with the shaft white above towards base; pectus and legs red-brown tinged with grey, the tarsi grey; abdomen ochreous brown. Fore wing glossy leaden grey irrorated with blackish; an inwardly oblique yellow antemedial line defined on outer side by dark red-brown; reniform with whitish annulus; postmedial line yellow defined on inner side by a fine red-brown line and on outer by a red-brown band, arising from costa towards apex, oblique to vein 2, then erect; a subterminal series of black points on the veins just beyond the brown band; a chocolate-brown apical spot; a terminal series of minute black points. Hind wing greyish ochreous suffused with brown, the terminal area broadly grey-brown, defined on inner side by the faint whitish postmedial line bent outwards to

inner margin; cilia brownish grey; the underside ochreous brown, the apical area browner.

Fig. 29.—*Phurys vinculum*, ♂. ½.

Hab. U.S,A., Southern States, Florida (*Doubleday*), 2 ♂, Miami (*Schaus*), 1 ♂, N. Smyrna, 1 ♂, Tampa, 1 ♂; Bahamas, Nassau (*Sir G. Carter*, *Bonhote*), 3 ♂, 1 ♀. *Exp.* 36–40 millim.

7877. **Phurys immunis.** (Plate CCXXIV. fig. 1.)

Phurys immunis, Guen. Noct. iii. p. 305 (1852); Druce, Biol. Cent.-Am., Het. i. p. 385.

♂. Head and thorax ochreous tinged with red-brown; antennæ brown at tips; pectus and legs red-brown, the tarsi and hind legs pale ochreous; abdomen pale ochreous. Fore wing pale ochreous tinged and irrorated with red-brown; antemedial line obliquely incurved, yellow defined on outer side by red-brown and with some red-brown suffusion beyond it; reniform with faint whitish annulus, narrow; two rather faint obliquely incurved and slightly sinuous red-brown lines just beyond the cell; postmedial line yellow defined on outer side by a red-brown band, arising from costa towards apex and obliquely incurved; a subterminal series of black points on the veins just beyond the brown band; the termen suffused with brown; a terminal series of minute black points. Hind wing ochreous, the terminal area suffused with reddish brown defined on inner side by the faint pale postmedial line; a terminal series of minute black points; cilia ochreous at base, whitish at tips; the underside ochreous, the costal area and terminal area to vein 4 tinged with red-brown, a faint brown postmedial line and subterminal shade from costa to vein 5.

♀. Fore wing more evenly suffused with red-brown.

Ab. 1. Fore wing with the reniform filled in with dark brown.

Hab. Mexico, Presidio (*Forrer*), 1 ♂, Guerrero, Dos Arroyas (*H. H. Smith*), 1 ♀, Acapulco (*H. H. Smith*), 1 ♂, Tierra Colorada (*H. H. Smith*), 1 ♂, 1 ♀, Yucatan, Temax (*Gaumer*), 2 ♂, 1 ♀; Guatemala, San Geronimo (*Champion*), 2 ♂, 1 ♀, Zapote (*Champion*), 1 ♂, 1 ♀, Irazu (*Rogers*), 1 ♂; Honduras (*Dyson*), 1 ♀; Panama (*J. J. Walker*), 1 ♂, Chiriqui (*Champion*), 1 ♂, Taboga I. (*J. J. Walker*), 1 ♂, Godman-Salvin Coll.; Jamaica (*Goss*), 1 ♀, Gordon Town (*Kaye*), 1 ♂; Cuba, Santiago (*Schaus*), 2 ♀, Matanzas (*Schaus*), 1 ♀; Haiti (*Tweedie*), 3 ♂, 2 ♀; St. Thomas; Antigua (*Gregory*), 1 ♀; Guadaloupe; Martinique; Sta. Lucia (*Cowie*), 1 ♂, 1 ♀; St. Vincent (*H. H. Smith*), 1 ♂; Barbados (*Frampton*), 1 ♂, 1 ♀; Grenada (*H. H. Smith*), 2 ♂, 1 ♀; Venezuela, 2 ♂, 2 ♀; Br. Guiana (*Roberts*), 1 ♂, 1 ♀, Demerara (*Rodway*), 1 ♂, Bartica (*Kaye*), 1 ♀; Fr. Guiana St. Laurent Maroni, 2 ♂. *Exp.* 30–38 millim.

Sect. II. (*Crochiphora.*) Femora and tibiæ of male smoothly scaled.

A. Fore wing with the ground-colour pale ochreous.
  a. Fore wing with oblique black band or line from below angle of cell to inner margin before middle ..... *basilans.*
  b. Fore wing without oblique black band or line from below angle of cell to inner margin ..... *agrapta.*
B. Fore wing with the ground-colour purple-grey.
  a. Fore wing with two indistinct lines just beyond the cell, the veins beyond the cell streaked with white.
    a^1. Fore wing with brown suffusion beyond the reniform ..... *infecta.*
    b^1. Fore wing without brown suffusion beyond the reniform ..... *bistriga.*
  b. Fore wing without indistinct lines just beyond the cell, the veins not streaked with white.
    a^1. Fore wing with the antemedial line defined on inner side by white and almost straight.
      a^2. Fore wing with the antemedial line black and diffused on inner area ..... *lima.*
      b^2. Fore wing with the antemedial line brown and not diffused on inner area ..... *herbarum.*
    b^1. Fore wing with the antemedial line defined on inner side by yellow.
      a^2. Fore wing with the antemedial line almost straight.
        a^3. Fore wing with the postmedial line oblique..... *bistrigata.*
        b^3. Fore wing with the postmedial line erect ..... *ovalis.*
      b^2. Fore wing with the antemedial line minutely dentate on the veins ..... *campanilis.*
    c^1. Fore wing with the antemedial line indistinct and not defined on inner side by white or yellow.
      a^2. Fore wing with the antemedial line waved ..... *flavistriaria.*
      b^2. Fore wing with the antemedial line angled outwards on median nervure ..... *carolina.*

7878. **Phurys basilans.** (Plate CCXXIV. fig. 2.)

Phurys basilans, Guen. Noct. iii. p. 306 (1852).
Phurys asseverans, Wlk. xv. 1844 (1858).
Hormisa abeluxalis, Wlk. xix. 847 (1859).
Euclidia tephrina, Feld. Reis. Nov. pl. 117. f. 7 (1874).
Cænurgia purgata, Druce, Biol. Cent.-Am., Het. i. p. 387 (part.).

Head and thorax ochreous white, the head, tegulæ, and prothorax tinged with red-brown; abdomen ochreous white; pectus, legs, and ventral surface of abdomen ochreous. Fore wing pale ochreous, the costal area slightly irrorated with red-brown; an oblique rather diffused black fascia from below lower angle of cell to inner margin near base towards which it narrows; a black point in middle of cell and discoidal point; postmedial line yellow defined on outer side by a dark brown line followed by a red-brown band, some reddish brown suffusion before it beyond the oblique fascia, arising from costa close to apex, oblique and slightly incurved; a faint subterminal brown line just beyond the brown band with minute black streaks at the veins; a fine brown terminal line; cilia brown at middle, ochreous at base and tips. Hind wing ochreous white, the termen more ochreous; cilia brownish from apex to vein 2; the underside with the costal area and terminal area to vein 2 ochreous yellow slightly irrorated with red-brown.

Ab. 1. Fore wing with the oblique black fascia narrower and less diffused.

♀. Head, thorax, and fore wing more strongly suffused and irrorated with reddish brown, the oblique fascia from below end of cell slight, brownish, and obsolescent, the yellow postmedial line more distinct.

Hab. Honduras (*Dyson*), 1 ♂, Ruatan I. (*Gaumer*), 1 ♀, Godman-Salvin Coll.; Venezuela, 1 ♂; Brazil, Itaparica (*Meade-Waldo*), 1 ♀, Pernambuco, 1 ♂, Espiritu Santo, 1 ♂, 1 ♀, Rio Janeiro (*Dohrn*, *Fry*), 7 ♂, 4 ♀, Tijuca (*Wagner*), 1 ♀; Paraguay, Sapucay (*Foster*), 6 ♂, 1 ♀. *Exp.* 32–36 millim.

7879. **Phurys agrapta**, n. sp. (Plate CCXXIV. fig. 2.)

♂. Head, thorax, and abdomen pale ochreous; palpi, antennæ, and pectus suffused with red-brown. Fore wing pale ochreous, the costal area slightly irrorated with red-brown, the terminal area tinged with grey; a black point in middle of cell and discoidal point; two faint oblique brown lines just beyond the cell; postmedial line red-brown defined on outer side by a greyish brown band, arising from costa close to apex, oblique and slightly incurved; a grey-brown subterminal line just beyond the brown band, with minute black points at the veins; a grey-brown terminal line; cilia

grey-brown, whitish at base and tips. Hind wing ochreous white; cilia brownish at base, whitish at tips; the underside tinged with red-brown except on inner area.

Hab. Br. Guiana, Demerara (*Rodway*), 2 ♂ type. *Exp.* 32 millim.

7880. **Phurys infecta.** (Plate CCXXIV. fig. 4.)

Celiptera infecta, Wlk. xiv. 1487 (1858).
Mocis refracta, Wlk. xiv. 1488 (1858).

♂. Head and thorax pale purplish grey suffused with red-brown; abdomen pale grey suffused with red-brown. Fore wing pale glossy purple-grey irrorated with red-brown; a slight curved dark subbasal line defined on outer side by whitish; antemedial line white defined on outer side by diffused chocolate-brown, slightly excurved below costa, then erect; reniform with its centre defined by brown and white annulus defined by chocolate-brown, a patch of chocolate-brown suffusion beyond it traversed by faint whitish streaks on the veins; a slight dark line from inner edge of reniform to inner margin and two faint lines beyond the cell somewhat incurved below vein 6; postmedial line white defined on inner side by a fine brown line and on outer by a chocolate-brown band diffused outwardly, slightly excurved below costa, then obliquely incurved; an indistinct dentate dark subterminal line with blackish points at the veins; a deep chocolate-brown spot at apex and fine rather punctiform blackish terminal line; cilia pale grey at base, brown at tips. Hind wing greyish suffused with red-brown; a slight whitish postmedial line from discal fold to tornus; cilia whitish at base, brownish at tips; the underside whitish irrorated with red-brown, the terminal area suffused with red-brown except towards tornus, an indistinct curved brown postmedial line from costa to vein 2.

Hab. Haiti (*Tweedie*), 2 ♂ type and type *refracta*; ? Brazil. *Exp.* 36 millim.

7881. **Phurys bistriga.** (Plate CCXXIV. fig. 5.)

Phurys bistriga, Herr.-Schäff. Corresp.-blatt. zool.-min. Ver. Regensb. xxiii. p. 155 (1869).

Head and thorax purplish grey irrorated with red-brown; palpi and fore legs suffused with brown; abdomen pale grey irrorated with brown. Fore wing pale glossy grey with a slight cupreous tinge and irrorated with brown; a slight white subbasal line from costa to submedian fold; antemedial line white defined on outer side by rather diffused dark red-brown, slightly outwardly oblique; reniform with its centre suffused by brown and whitish annulus defined by brown, slightly angled inwards on median nervure; a faint oblique dark line from lower angle of cell to inner margin; two faint dark lines beyond the cell, oblique below vein 6; the veins beyond the cell streaked with white and defined by fine

brown streaks; postmedial line white defined on inner side by a fine brown line and on outer by a chocolate-brown band diffused outwardly, slightly excurved below costa, then obliquely incurved; the terminal area deep purple-grey with traces of a waved dark subterminal line excurved at middle; a deep chocolate-brown spot at apex and a rather punctiform black terminal line; cilia grey at base, fuscous at tips. Hind wing pale greyish suffused with red-brown, the terminal area darker brown defined on inner side by the slight whitish postmedial line from vein 6 to tornus; a fine dark terminal line; cilia with a pale line at base; the underside whitish tinged and irrorated with brown, a slight dark discoidal point and traces of a postmedial line from costa to vein 5.

Hab. Cuba, Santiago (*Schaus*), 3 ♂, 3 ♀. *Exp.* 26–30 millim.

7882. **Phurys lima.** (Plate CCXXIV. fig. 6.)

Phurys lima, Guen. Noct. iii. p. 305 (1852); Smith, Cat. Noct. N. Am. p. 357.
Poaphila obversa, Wlk. xiv. 1473 (1858).
Poaphila dissocians, Wlk. xiv. 1477 (1858).

♂. Head and thorax pale purplish grey suffused with red-brown; abdomen pale grey suffused with red-brown. Fore wing pale purplish grey tinged with red-brown and irrorated with dark brown; a slight dark subbasal line from costa to submedian fold; a small round black spot above inner margin before the antemedial line, which is whitish defined on outer side by black-brown except at costa, rather diffused especially on inner area, evenly incurved; reniform faintly defined at sides by brown; postmedial line whitish defined on inner side by a fine brown line and on outer by black-brown suffusion, arising from costa towards apex and obliquely incurved; a subterminal series of slight blackish points on the veins; a terminal series of minute blackish points. Hind wing greyish suffused with brown; a slight whitish postmedial line from below costa to inner margin towards tornus; the underside whitish thickly irrorated with brown.

Hab. U.S.A., New York, Southern States, 1 ♂, Georgia, 1 ♂ type *obversa*, Texas, Dallas (*Boll*), 1 ♂; Hab. ign., 1 ♂ type *dissocians*. *Exp.* 38–40 millim. This may be the male of *P. bistrigata*.

7883. **Phurys herbarum.** (Plate CCXXIV. fig. 7.)

Poaphila herbarum, Guen. Noct. iii. p. 303 (1858); Smith, Cat. Noct. N. Am. p. 357.
Celiptera bifasciata, Bates, Can. Ent. xviii. p. 94 (1886).

♂. Head, thorax, and abdomen whitish tinged with red-brown. Fore wing pale purplish grey suffused with red-brown and irrorated with dark brown; a small round black spot above inner margin before the antemedial line, which is pale yellow defined on outer side by black-brown, arising at subcostal nervure and rather

inwardly oblique; reniform faintly defined at sides by brown; postmedial line pale yellow defined on inner side by a slight red-brown line and on outer by dark brown, arising from costa towards apex and obliquely incurved; a subterminal series of minute black points on the veins; a terminal series of minute black points. Hind wing whitish suffused with red-brown and slightly irrorated with dark brown; a faint whitish postmedial line; the underside white irrorated with brown, a faint diffused curved brown postmedial line and traces of a subterminal line.

♀. Fore wing without the black spot before the antemedial line.

Hab. U.S.A., Southern States, Georgia, 1 ♀, Texas, Dallas (*Boll*), 2 ♂, 4 ♀. *Exp.* 38–42 millim.

7884. **Phurys bistrigata.** (Plate CCXXIV. fig. 8.)

Ptichodes bistrigata, Hübn. Zutr. exot. Schmett. i. 21. ff. 111–112 (1818); Smith, Cat. Noct. N. Am. p. 357.

♀. Head and thorax purple-grey irrorated with brown; abdomen pale grey irrorated with brown. Fore wing purple-grey irrorated with brown; the costal edge brownish ochreous; antemedial line ochreous yellow defined on outer side by red-brown, inwardly oblique; a slight brown discoidal striga; postmedial line ochreous yellow defined on inner side by red-brown, arising from costa towards apex, inwardly oblique; traces of a brown subterminal line; a terminal series of black points; cilia with faint dark lines near base and tips. Hind wing pale grey irrorated with red-brown, the terminal area suffused with red-brown; a slight dark terminal line from apex to vein 4; the underside pale grey irrorated with red-brown.

Hab. U.S.A., Georgia, 1 ♀. *Exp.* 38 millim.

7885. **Phurys ovalis.** (Plate CCXXIV. fig. 9.)

Phurys ovalis, Grote, Papilio, iii. p. 75 (1883); Smith, Cat. Noct. N. Am. p. 357.

Head and thorax purplish grey irrorated with brown; abdomen pale grey irrorated with brown. Fore wing purplish grey irrorated with brown; antemedial line ochreous yellow defined on outer side by red-brown, outwardly oblique; a dark discoidal striga; postmedial line ochreous yellow defined on inner side by red-brown, inwardly oblique; an indistinct pale dentate subterminal line with black points at the veins; a fine waved brown terminal line; cilia brown with whitish lines at base and near tips. Hind wing pale purplish grey suffused and irrorated with red-brown; a slight dark postmedial line defined on outer side by grey from vein 5 to inner margin; a brown terminal line; cilia brownish grey with a pale line at base; the underside whitish tinged and irrorated with red-brown.

Hab. U.S.A., Arizona, Huachuca Mts., 1 ♀. *Exp.* 34 millim.; ♂ in Coll. Wolley-Dod.

*7886. Phurys campanilis.

Phurys campanilis, Smith, Can. Ent. xxxvii. p. 68 (1905).

♂. Head and thorax deep bluish grey; abdomen ochreous suffused with fuscous. Fore wing deep bluish grey; antemedial line diffused, blackish defined on inner side by orange, oblique, minutely dentate on the veins and incurved in the interspaces; reniform an oblique blackish bar; postmedial line double, diffused, blackish filled in with orange, almost straight and erect, the inner line interrupted and indistinct except at costa and inner margin, the outer line expanding into oval spots at discal and submedian folds; subterminal line golden brown defined on inner side by faint pale shades, angled outwards on the veins and incurved in the interspaces; a terminal series of blackish points on the veins. Hind wing dark ochreous suffused with fuscous; a faint yellowish medial shade and traces of a dentate subterminal line. Underside of both wings uniform tawny yellow, the cilia leaden grey.

Hab. U.S.A., Florida, Chokaloskee. *Exp.* 35 millim. This species is unknown to me.

7887. Phurys flavistriaria.

Crochiphora flavistriaria, Hübn. Zutr. exot. Schmett. iii. p. 35, ff. 555–556 (1825); Smith, Cat. Noct. N. Am. p. 359.
Poaphila perplexa, Guen. Noct. iii. p. 302 (1852); Smith, Cat. Noct. N. Am. p. 359.
Poaphila perspicua, Wlk. xiv. 1477 (1858); Smith, Cat. Noct. N. Am. p. 358.
Phurys glans, Grote, Proc. Bost. Soc. N. H. xviii. p. 416 (1875).

♂. Head, thorax, and abdomen pale purplish grey tinged with red-brown; palpi and fore tibiæ red-brown. Fore wing pale

Fig. 30.—*Phurys flavistriaria*, ♂. ½.

purplish grey slightly tinged with red-brown and irrorated with dark brown; a very indistinct waved dark antemedial line; a

strong oblique slightly sinuous chocolate-brown line from apex to inner margin beyond middle with a faint yellowish line on its inner side defined by a very slight brown line on inner half; a series of black points just before termen. Hind wing purplish grey suffused with fuscous brown; a rather darker subterminal shade extending to termen on apical area, the rest of termen greyer; the underside whitish irrorated with dark brown, the costal area tinged with red-brown, a slight black discoidal lunule and terminal series of small black lunules.

Ab. 1. *perplexa*. Fore wing rather greyer.

Hab. U.S.A., Florida, 1 ♂ type *glans*; HAB. IGN., 1 ♂ type *perspicua*. *Exp.* 38 millim.

*7888. Phurys carolina.

Phurys carolina, Smith, Can. Ent. xxxvii. p. 68 (1905).

♂. Head and thorax fuscous brown suffused with violaceous grey; abdomen fuscous brown. Fore wing fuscous brown suffused with violaceous grey; antemedial line indistinct, dark, diffused, angled outwards on median nervure; reniform an indistinct elliptical blackish spot; postmedial line double, dark brown filled in with yellow, excurved below costa towards which it is reduced to a slight line faintly defined on outer side by yellow scales, joined at vein 6 by a double oblique dark streak filled in with yellow from apex, then continued as an inwardly oblique line to inner margin; subterminal line absent; a fine crenulate brown terminal line with blackish points in the interspaces. Hind wing almost uniform dark brown. Underside of both wings yellowish irrorated with fuscous and with indistinct discoidal spots.

♀. Fore wing with the markings almost obsolete.

Hab. U.S.A., N. Carolina. *Exp.* 34 millim. This species is unknown to me.

Genus **DORYODES**.

	Type.
Doryodes, Guen. Ur. & Phal. ii. p. 233 (1857)	*bistrialis*.
Themma, Wlk. xxvii. 186 (1863)	*spadaria*.
Tunza, Wlk. xxvii. 196 (1863)	*spadaria*.

Proboscis aborted and slender; palpi with the 2nd joint obliquely upturned, curved forward at extremity and moderately scaled, the 3rd moderate, porrect; frons smooth, with tuft of hair above; eyes large, round; antennæ of male bipectinate with moderate branches to apex; thorax clothed with hair and hair-like scales, and without crests; build slender; tibiæ smoothly scaled, all the tibiæ spined; abdomen long, smoothly scaled and without crests. Fore wing very long and narrow, the apex produced and acute, the termen very oblique and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base, then approximated to it to beyond middle.

A. Fore wing with silvery white streaks below subcostal nervure and vein 7 to the postmedial line ..... *insularia.*
B. Fore wing without silvery white streak below subcostal nervure and vein 7.
a. Fore wing with the brown fascia below the cell well defined, the postmedial line strong and extending to vein 2 ..... *bistrialis.*
b. Fore wing with rather diffused brown shade below the cell, the postmedial line fine and ending at vein 3 ..... *spadaria.*

7889. **Doryodes insularia.** (Plate CCXXIV. fig. 10.)

Doryodes insularia, Hmpsn. A. M. N. H. (7) xiv. p. 174 (1904).

♂. Head and thorax white slightly tinged with brown; antennæ with the branches brown; abdomen white. Fore wing white tinged with ochreous; a black point in middle of cell and discoidal point; a silvery white streak below subcostal nervure and vein 7 to the postmedial line; a silvery white streak on median nervure and base of vein 5 with a chocolate-brown fascia below it and beyond it where it is curved upwards to apex on the inner side of an obliquely curved silvery white fascia from apex to vein 2 below middle of cell; a fine brown terminal line. Hind wing white slightly tinged with ochreous.

Hab. BAHAMAS, Nassau (*Sir G. Carter*), 2 ♂ type. *Exp.* 30 millim.

7890. **Doryodes bistrialis.**

Agriphila bistrialis, Geyer, Hübn. Zutr. ex. Schmett. 4. p. 38, ff. 775, 776 (1832); Smith, Cat. Noct. N. Am. p. 192.
Ligia acutaria, Herr.-Schäff. Samml. eur. Schmett. vi. p. 74, Geom. f. 477 (1856); Guen. Ur. & Phal. ii. p. 233, pl. 17. f. 6.

Head and thorax ochreous white tinged with brown; antennæ

Fig. 31.—*Doryodes bistrialis*, ♂. ¾.

with the branches brown; palpi and fore legs reddish brown; abdomen ochreous white. Fore wing ochreous white tinged and

slightly irrorated with brown; a black point in middle of cell and discoidal point; a silvery white streak along median nervure to vein 5 beyond the cell defined below by a slight dark streak and with a chocolate-brown fascia below it and beyond it to the postmedial line, which is silvery white, arising from apex and obliquely downcurved to vein 2 below end of cell, defined on inner side by a fine dark line and on outer side also from below apex to vein 5; an indistinct brown subterminal line except towards inner margin; a fine dark terminal line and a slight brown line near base of cilia. Hind wing pale ochreous, the cilia whitish.

Hab. U.S.A., Eastern, Middle, and Southern States, 2 ♂, 4 ♀, Maine, Massachusetts (*Packard*), 1 ♂, Kansas. *Exp.* 34–40 millim.

7891. **Doryodes spadaria.** (Plate CCXXIV. fig. 11.)

Doryodes spadaria, Guen. Ur. & Phal. ii. p. 234 (1857); Smith, Cat. Noct. N. Am. p. 192.
Themma divisa, Wlk. xxvii. 186 (1863).
Tunza promptella, Wlk. xxvii. 196 (1863).

Head and thorax pale ochreous tinged with brown; antennæ with the branches brown; palpi and fore legs in front reddish brown; abdomen ochreous white. Fore wing ochreous tinged and slightly irrorated with brown; a black point in middle of cell and discoidal point; a silvery white streak on median nervure and base of vein 5 defined below by a slight dark streak and with a chocolate-brown shade below it; postmedial line silvery white defined by fine dark brown lines, arising from apex and oblique to vein 3 just beyond end of cell; an indistinct brown subterminal line except towards inner margin; a fine dark terminal line and slight brown line near base of cilia. Hind wing white faintly tinged with ochreous brown.

Ab. 1. *promptella*. Fore wing with the cell and the area beyond it to the submarginal line clearer ochreous.

Hab. U.S.A. Florida, St. John's Bluff (*Doubleday*), 4 ♂, 1 ♀ type *divisa*; Hab. ign., 1 ♂ type *promptella*. *Exp.* 40–44 millim.

Genus **NYMBIS.**

	Type.
Nymbis, Guen. Noct. iii. p. 320 (1852)	*iniqua*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd moderate; frons smooth, with tuft of hair above; eyes large, round; antennæ of male with bristles and cilia; thorax clothed with scales and hair mixed and without crests; fore tibiæ not spined, the hind tibiæ spined between the mid and terminal spurs only; abdomen smoothly scaled and without crests. Fore wing with the apex somewhat produced and acute, the termen evenly curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about one-third length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male with the shaft thickened before middle; femora and tibiæ fringed with long hair; hind wing on underside with the basal and inner areas clothed with woolly hair.

A. Fore wing of male with the postmedial line strongly incurved ..... *arcuata.*
B. Fore wing of male with the postmedial line slightly incurved.
a. Fore wing with the antemedial line oblique ..... *helvina.*
b. Fore wing with the antemedial line almost erect..... *montana.*

7892. **Nymbis arcuata.**

Phurys arcuata, Wlk. xxxiii. 996 (1865), ♂.
Remigia multilinea, Wlk. xxxiii. 1020 (1865), ♀.

♂. Head, thorax, and abdomen grey-white slightly tinged with reddish brown, the hairs on legs rather redder brown. Fore wing grey-white slightly tinged with red-brown and irrorated with dark brown; a minute round black spot above inner margin before the antemedial line, which is red-brown with a black bar from submedian fold to inner margin, expanding into a spot at vein 1,

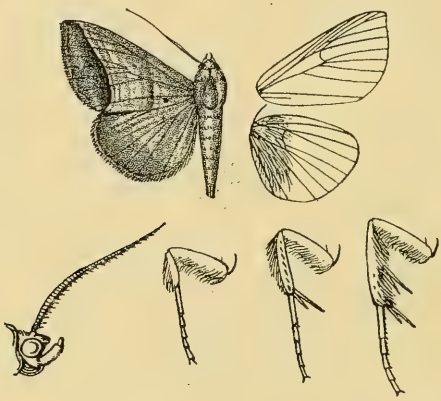


Fig. 32.—*Nymbis arcuata*, ♂. ½.

arising at subcostal nervure and inwardly oblique; a black discoidal point; an indistinct oblique reddish brown line from just before lower angle of cell to inner margin and two indistinct obliquely incurved reddish brown lines beyond the cell; postmedial line whitish defined on outer side by black-brown shading to reddish brown, arising from below costa towards apex, obliquely and strongly incurved; a subterminal series of minute black points on the veins; the termen slightly suffused with brown at middle; a terminal series of minute black points. Hind wing grey-white tinged with reddish brown; traces of an oblique brown postmedial line defined on outer side by whitish; an indistinct dark subterminal shade

diffused to termen at apex; a terminal series of black points; the underside whitish, the hair on basal and inner areas tinged with rufous, a dark subterminal shade on costal half.

♀. Fore wing without the black spot above inner margin, the antemedial line without black beyond it on inner area, the lines beyond the cell not incurved, the postmedial line oblique and not incurved, defined on outer side by red-brown instead of black-brown; hind wing rather darker.

Hab. Venezuela, 2 ♀; Br. Guiana (*Rodway*), 2 ♂, 2 ♀, Potaro R. (*Kaye*), 4 ♂, 2 ♀; Hab. ign., 1 ♂ type, 1 ♀ type *multilinea*. *Exp.* 40–44 millim.

7893. **Nymbis helvina.** (Plate CCXXIV. fig. 12.)

Phurys helvina, Guen. Noct. iii. p. 307 (1852); Druce, Biol. Centr.-Am., Het. i. p. 384.

Phurys helveola, Herr.-Schäff. Corresp.-blatt. zool.-min. Regensb. xxiii. p. 155 (1869).

♂. Head, thorax, and abdomen greyish ochreous suffused with reddish brown; the hair on fore coxæ dark red-brown. Fore wing greyish ochreous tinged with red-brown and irrorated with black-brown; a small round black spot above inner margin before the inwardly oblique antemedial line, which is dark, black-brown below submedian fold, slightly defined on inner side by grey and on outer by a narrow brown band; a blackish discoidal point placed on an oblique brownish line; three slightly waved and somewhat oblique brown lines beyond the cell; postmedial line arising from costa towards apex, oblique and slightly incurved, ochreous defined on inner side by a slight brown line and on outer by dark brown followed by a reddish brown band with the subterminal series of black points on the veins on its outer edge; the termen with a slight brown shade except towards tornus, a series of blackish points in the interspaces just before termen and a terminal series on the veins. Hind wing greyish suffused with brown; traces of a brown postmedial line and a dark subterminal shade with dark brown bar at tornus with a pale line before it; a series of slight dark points in the interspaces just before termen and a terminal series on the veins; the underside with the hair on basal and inner areas tinged with rufous, a dark subterminal shade.

♀. Fore wing rather more strongly tinged with red-brown, no black spot above inner margin; the underside greyer suffused with brown.

Hab. Mexico, Misantla (*Trujillo*), 1 ♀, Vera Cruz (*Godman*), 1 ♂, Guerrero, Sierra Colorada (*H. H. Smith*), 1 ♀, Vera Paz, Atoyac (*H. H. Smith*), 2 ♂, Tabasco, Teapa (*H. H. Smith*), 4 ♂, Vera Cruz, Cordova (*Rümeli*), 2 ♂, Durango (*Forrer*), 2 ♂; Honduras (*Dyson*), 1 ♂, 1 ♀, R. Sarstoon (*Blancaneaux*), 1 ♂, Ruatan I. (*Rodriguez*), 1 ♂; Guatemala, Zapote (*Champion*), 1 ♂, S. Geronimo (*Champion*), 1 ♀, San Isidro (*Champion*), 2 ♂, Cerro Zunil (*Champion*), 1 ♀, Volcan de Atitlan (*Champion*),

1 ♂, 1 ♀, Vera Paz, Panzos (*Champion*), 1 ♀, San Juan (*Champion*), 2 ♂; Costa Rica, Irazu (*Rogers*), 1 ♂, Caché (*Rogers*), 2 ♂, Sta Clara Valley (*Zurcher*), 1 ♂, 1 ♀; Panama, Chiriqui (*Champion*), 3 ♂, 2 ♀, Godman-Salvin Coll.; Cuba; Colombia, Bogotá (*Stevens*), 1 ♀, Minca (*H. H. Smith*), 2 ♀; Venezuela, 2 ♂, 1 ♀; Brazil, Espiritu Santo, 1 ♂. *Exp.* 42–50 millim.

7894. **Nymbis montana.** (Plate CCXXIV. fig. 13.)

Celiptera montana, Schaus, A. M. N. H. (8) viii. p. 211 (1911).
Poaphila amplissima, Druce, Biol. Centr.-Am., Het. i. p. 382 (part.), nec Wlk.
Phurys helvina, Druce, Biol. Centr.-Am., Het. i. p. 384 (part.), nec Guen.

♂. Head and thorax red-brown mixed with grey; abdomen grey suffused with red-brown. Fore wing grey suffused with red-brown and strongly irrorated with dark brown; antemedial line ochreous white defined on outer side by red-brown, slightly inwardly oblique; reniform with very ill-defined pale annulus, narrow, a dark point on its inner side in discal fold; two indistinct oblique dark lines beyond the cell; postmedial line dark red-brown, defined on inner side by ochreous white and with a slight red-brown band beyond it, arising from costa towards apex and inwardly oblique; a subterminal series of blackish points on the veins; a series of blackish points in the interspaces just before termen and a terminal series on the veins. Hind wing reddish brown; a dark subterminal shade with a slight pale line before it from vein 2 to inner margin, the area beyond it grey irrorated with brown; a terminal series of black points; the underside grey irrorated and suffused with fuscous brown, the hair on basal and inner areas tinged with reddish, a dark subterminal shade.

♀. Fore wing slightly redder; underside of hind wing wholly grey irrorated with brown.

Hab. Guatemala, S. Geronimo (*Champion*), 1 ♂, 2 ♀; Costa Rica, Laguna (*Schaus*), 1 ♂, Tuis (*Schaus*), 1 ♀; Panama, Chiriqui (*Ribbé*), 1 ♂, Godman-Salvin Coll. *Exp.* 46–48 millim.

Sect. II. Antennæ of male normal.

A. Hind tarsi of male fringed above with long hair, the fore tarsi less strongly fringed with hair, the femora and fore and mid tibiæ fringed with long hair; hind wing on underside with the basal and inner areas clothed with woolly hair.
  a. Fore wing of male with the postmedial line strongly incurved, of female slightly oblique ..... *fuscilineata.*
  b. Fore wing with the postmedial line oblique from apex to middle of vein 1.
    a^1. Fore wing with the area between the postmedial and subterminal lines blackish brown ..... *teligera.*
    b^1. Fore wing with the postmedial line slightly defined on outer side by red-brown..... ..... *inficita.*

7895. Nymbis fuscilineata. (Plate CCXXIV. fig. 14.)

Celiptera fuscilineata, Kaye, Trans. Ent. Soc. 1901, p. 127, pl. v. f. 5.

♂. Head and thorax pale red-brown slightly mixed with greyish; pectus, legs, and abdomen pale red-brown. Fore wing pale red-brown slightly tinged with greyish and irrorated with dark brown; subbasal line greyish faintly defined by brown, sinuous, from costa to submedian fold; a round black spot with pale annulus above inner margin before the antemedial line, which is greyish defined on outer side by rather diffused dark red-brown, somewhat oblique and sinuous; a minute white spot defined by brown in middle of cell; reniform with pale annulus slightly defined by brown, elliptical, some deeper red-brown beyond it extending to the postmedial line; a slight sinuous brown medial line and two indistinct waved obliquely incurved lines beyond the cell; postmedial line pale defined on outer side by diffused dark red-brown, arising from costa towards apex, oblique and slightly sinuous to vein 4, then obliquely incurved to inner margin near tornus; an indistinct pale minutely waved subterminal line with series of blackish points on its outer side at the veins; a slight waved dark terminal line; cilia with a fine pale line at base. Hind wing dull red-brown, the cilia paler; the underside greyish brown clothed with silky hair to beyond middle.

♀. Rather paler; fore wing without the black spot above inner margin, the antemedial line inwardly oblique, the reniform with a slight rufous patch beyond it, the postmedial line oblique and not incurved, defined on outer side by red-brown; hind wing grey-brown with the terminal area darker, the underside with faint postmedial line and subterminal shade.

Hab. Trinidad (*Kaye*), 1 ♂, 1 ♀ type; Brazil, Espiritu Santo, 1 ♀. *Exp.* 36–48 millim.

7896. Nymbis teligera.

Phurys teligera, Wlk. Journ. Linn. Soc., Zool. ix. pp. 181, 191 (1867); Druce, Biol. Centr.-Am., Het. i. p. 386.

Head, thorax, and abdomen pale red-brown. Fore wing grey tinged with red-brown and with slight dark irroration except on terminal area, the area below vein 1 greyer with more prominent dark irroration; a broad blackish brown fascia above vein 1 from near base to the postmedial line; a minute antemedial black point above inner margin; a minute blackish point in middle of cell; an oblique wedge-shaped blackish brown band from apex to vein 1, defined on inner side by the white postmedial line from vein 7 to middle of vein 1 and on outer by the rather diffused whitish subterminal line, defined on outer side by a faint brown line with minute black streaks at the veins; a fine brown terminal line; cilia greyish with a brown line through them. Hind wing greyish suffused with glossy fuscous brown; a slight dark terminal line;

cilia greyer; the underside greyer, the costal area tinged with reddish and slightly irrorated with brown.

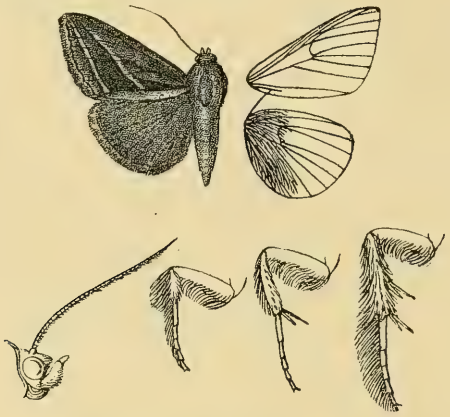


Fig. 33.—*Nymbis teligera*, ♂. ½.

Hab. Guatemala, Vera Paz, Coban (*Conradt*), 1 ♀; Panama, Chiriqui (*Ribbe*), 1 ♀, Godman-Salvin Coll., Cana Mines (*Tylecote*), 1 ♂; Colombia, Sierra del Libano (*H. H. Smith*), 1 ♂; Br. Guiana (*Rodway*), 1 ♂; Fr. Guiana, St. Laurent Maroni (*Le Moult*), 1 ♀; E. Peru, Pozuzo, 1 ♀. *Exp.* 38–44 millim. Type † ♂ in Coll. Druce.

7897. **Nymbis inficita.** (Plate CCXXIV. fig. 15.)

Phurys inficita, Wlk. xxxiii. 994 (1865).

♀. Head, thorax, and abdomen pale grey tinged with reddish brown. Fore wing pale grey tinged with brown and irrorated with dark brown; a slight black point above inner margin before middle; reniform faintly defined by brown; a whitish line defined on outer side by dark brown, arising from apex and very oblique to vein 2 below end of cell, then bent inwards to middle of vein 1 where it terminates; traces of a pale subterminal line from below apex to inner margin, with a series of minute black streaks on its outer edge; a brown terminal line; cilia ochreous at base. Hind wing dull ochreous brown; a slight brown terminal line; cilia more ochreous; the underside ochreous irrorated with brown.

Hab. Haiti (*Tweedie*), 1 ♀ type. *Exp.* 44 millim.

B. Hind tarsi of male not fringed with hair above.
  a. Hind wing of male on underside wholly clothed with rough scales.
    a^1. Fore wing of male with the postmedial line strongly incurved between discal and submedian folds ..... *iniqua*.
    b^1. Fore wing of male evenly incurved throughout..... *prolixa*.

7898. **Nymbis iniqua.**

Nymbis iniqua, Guen. Noct. iii. p. 321 (1852); Druce, Biol. Centr.-Am., Het. i. p. 389.
Nymbis textilis, Guen. Noct. iii. p. 321 (1852); Druce, Biol. Centr.-Am., Het. i. p. 390.
Phurys optabilis, Wlk. xiv. 1485 (1858); Druce, Biol. Centr.-Am., Het. i. p. 388.
Poaphila basileuca, Wlk. Undescr. Lep., Het. p. 54 (1869).
Phurys coactilis, Feld. Reis. Nov. pl. 117. f. 15 (1874).

♂. Head, thorax, and abdomen dark red-brown. Fore wing chocolate-brown; a pale curved subbasal line from costa to submedian fold; a round black spot with pale annulus above inner margin before the outwardly oblique pale antemedial line defined on outer side by dark chocolate-brown; a slight pale streak on middle of inner margin with deep chocolate-brown above it to vein 1; a white point defined by dark brown in middle of cell; reniform

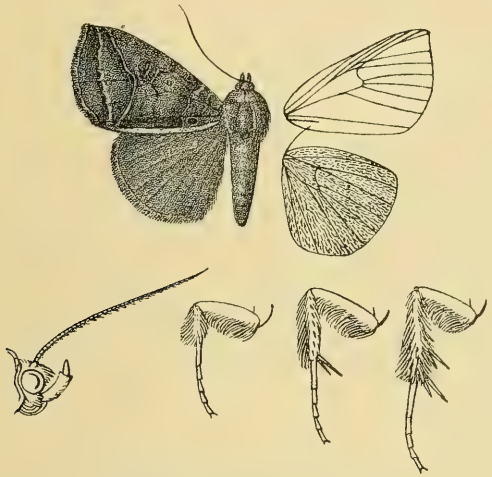


Fig. 34.—*Nymbis iniqua*, ♂. ½.

with pale annulus defined by chocolate-brown and with some deep chocolate-brown beyond it, elliptical; an indistinct sinuous brown line from just before lower angle of cell to inner margin and traces of a waved obliquely incurved line beyond the cell; postmedial line pale, arising from costa well beyond middle and strongly incurved, especially between discal and submedian folds, the area beyond it deep chocolate-brown; subterminal line straight, pale defined on outer side by dark brown and slight blackish points at the veins; a pale terminal line; cilia fuscous brown, whitish at tips. Hind wing very dark red-brown; cilia whitish at tips; the underside with the rough scaling black-brown, greyish on terminal area.

♀. Fore wing without the black spot above inner margin and dark suffusion beyond the antemedial line and on middle of inner margin, the postmedial line oblique and almost straight, with slight dark suffusion beyond it, the subterminal line reduced to a series of dark points; hind wing paler brown, with faint oblique pale line from vein 4 to tornus, the underside nearly uniform reddish brown.

Hab. Mexico, 1 ♀, Jalapa (*Trujillo*), 4 ♂, Vera Cruz, Atoyac (*Schumann*), 1 ♂; Honduras (*Dyson*), 1 ♂ type *optabilis*, Limas (*Brockholes*), 1 ♀ type *basileuca*; Guatemala, Zapote (*Champion*), 1 ♂; Panama, Chiriqui (*Ribbé*), 1 ♂, Godman-Salvin Coll., La Chorrera (*Dolby-Tyler*), 1 ♂; Fr. Guiana, type † ♂ *coactilis* in Coll. Rothschild; Brazil, Itaparica (*Meade-Waldo*), 1 ♀, Espiritu Santo, 1 ♂, 1 ♀; Paraguay, Sapucay (*Foster*), 1 ♂; Peru, Huancabamba, 1 ♀, Rio Colorado (*Watkins & Tomlinson*), 1 ♂. *Exp* 44–54 millim.

7899. **Nymbis prolixa.** (Plate CCXXIV. fig. 16.)

Phurys prolixa, Feld. Reis. Nov. pl. 117. f. 6 (1874).

♂. Head, tegulæ, and prothorax deep red-brown, the rest of thorax red-brown tinged with grey; abdomen red-brown slightly mixed with greyish. Fore wing bright red-brown; a slight curved pale subbasal line from costa to submedian fold; antemedial line pale defined on outer side by chocolate-brown, oblique, a small black spot before it above inner margin, the inner margin beyond it chocolate-brown, with a slight pale streak on the margin; a white point defined by dark brown in middle of cell; reniform with whitish annulus, elliptical, some chocolate-brown suffusion beyond it; a slight sinuous brown medial line; postmedial line whitish, incurved, the area beyond it suffused with chocolate-brown; subterminal line whitish, defined on outer side by dark brown, straight; cilia with a fine whitish line at base and whitish tips. Hind wing dark reddish brown; cilia whitish at tips; the underside clothed with rough blackish scales to beyond middle, the terminal area with grey scales.

♀. Fore wing much greyer, two indistinct sinuous lines beyond the cell, the postmedial line straight and oblique, the subterminal line represented by a series of blackish points; hind wing greyish brown, the terminal area darker; underside of both wings greyish brown with the terminal area darker.

Hab. Br. Guiana (*Rodway*), 2 ♂, 1 ♀; Brazil, Amazons, type † ♂ in Coll. Rothschild. *Exp.*, ♂ 50, ♀ 52 millim.

b. Hind wing of male on underside with the basal and inner areas clothed with silky hair.
  *a*¹. Fore wing of male with the antemedial line arising from beyond upper angle of cell and not crossing the cell.
    *a*². Fore wing of male with triangular patch of black-brown suffusion beyond the antemedial line below the cell ..... *yarnoti.*

b^2. Fore wing of male with the antemedial line narrowly defined by black-brown below the cell.
a^3. Fore wing of male with the antemedial line oblique to inner margin near base and with no black spot before it ..... *jugis.*
b^3. Fore wing of male with the antemedial line oblique to inner margin before middle, a small black spot before it above inner margin ..... *lineolaris.*
b^1. Fore wing of male with the antemedial line arising from upper angle of cell which it crosses ..... *jaliscana.*
c^1. Fore wing with the antemedial line arising from costa before middle.
a^2. Fore wing with the basal and terminal halves concolorous.
a^3. Fore wing with the postmedial line bent inwards at vein 6 to beyond the reniform ..... *copiola.*
b^3. Fore wing with the postmedial line not bent inwards at vein 6.
a^4. Fore wing with the postmedial line oblique to vein 3, then outwardly oblique ..... *flexa.*
b^4. Fore wing with the postmedial line oblique or slightly incurved.
a^5. Fore wing grey not suffused with red-brown.
a^6. Fore wing purplish grey, the lines defined by ochreous ..... *moxa.*
b^6. Fore wing brownish grey, the lines defined by whitish ..... *candida.*
b^5. Fore wing suffused with red-brown.
a^6. Fore wing with the antemedial line oblique ..... *bigutta.*
b^6. Fore wing with the antemedial line erect . *navilla.*
c^4. Fore wing with the postmedial line erect ..... *monaxa.*
b^2. Fore wing with the basal half grey, the terminal half purple-brown..... *dimera.*

7900. **Nymbis garnoti.**

Phurys garnoti, Guen. Noct. iii. p. 306, pl. 23. f. 3 (1852), ♂ ; Druce, Biol. Centr.-Am., Het. i. p. 386.
Phurys obligata, Wlk. xiv. 1483 (1858), ♀.

♂. Head, thorax, and abdomen pale red-brown. Fore wing grey tinged with red-brown and irrorated with fuscous; a small antemedial black spot above inner margin; reniform represented by an oblique pale striga slightly defined by brown; an oblique black-brown line from beyond upper angle of cell to inner margin just before middle where it is slightly curved outwards, followed by a triangular black-brown patch from lower angle of cell to inner margin; two obliquely incurved lines before the obliquely incurved whitish postmedial line which arises from costa just before apex and is followed by a black-brown band; traces of a subterminal line from below apex to inner margin with a series of black points at the veins; a fine dark terminal line with minute black points at the veins; cilia brown at tips from apex to vein 2. Hind wing pale reddish brown; a faint whitish postmedial line from discal fold to tornus; the terminal area fuscous brown with a faint pale bar from vein 3 to termen at vein 1 and some grey on termen except towards

apex; a fine dark terminal line; cilia brown at tips from apex to vein 2; the underside with the basal and inner areas pale rufous, the rest of wing grey irrorated with fuscous and with a dark subterminal shade.

Ab. 1. Fore wing with the antemedial black spot confluent with the triangular medial shade.

Ab. 2. Darker brown; fore wing with diffused dark streaks on basal half below costa and in and below the cell.

♀. Much browner: fore wing with the antemedial line more curved arising from upper angle of cell and crossing the cell,

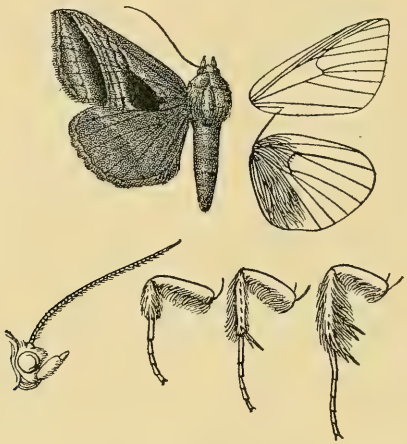


Fig. 35.—*Nymbis garnoti*, ♂. ½.

the postmedial area with three oblique brown lines, faint narrow red-brown shades beyond the ante- and postmedial lines.

Hab. Guatemala, S. Geronimo (*Champion*), 2 ♂; Honduras, R. Sarstoon (*Blancaneaux*), 1 ♂; Panama, Chiriqui (*Champion*), 1 ♂, Godman-Salvin Coll.; Jamaica (*Gosse*), 1 ♂, 1 ♀ type *obligata*, Gordontown (*Kaye*), 2 ♂, 2 ♀, Runaway Bay (*Walsingham*), 1 ♀; Cuba, Matanzas (*Schaus*), 2 ♂; Haiti (*Tweedie*), 2 ♂; Sta. Lucia (*Cowie*), 1 ♂; Grenada (*H. H. Smith*), 3 ♂, 2 ♀. *Exp.* 42–46 millim.

7901. **Nymbis jugis.** (Plate CCXXIV. fig. 17.)

Phurys jugis, Wlk. xiv. 1481 (1858); Druce, Biol. Centr.-Am., Het. i. p. 385 (part.).

♂. Head, thorax, and abdomen pale red-brown. Fore wing grey tinged with red-brown and irrorated with blackish; a very oblique slightly downcurved black-brown line defined on inner side by white from beyond upper angle of cell to inner margin well

before middle, slightly diffused on outer side below lower angle of cell; postmedial line white with a narrow black-brown band on its outer side, oblique and very slightly incurved from costa towards apex to inner margin; a subterminal series of black points on the veins and a terminal series; cilia brown at tips. Hind wing dull reddish brown, a faint oblique pale line from vein 3 to tornus and subterminal fuscous shade; a terminal series of black points; cilia pale at base; the underside grey-white irrorated with fuscous, the hair on basal and inner areas pale rufous.

♀. Fore wing with the ante- and postmedial lines slightly defined on outer side by dark brown.

Hab. Mexico, Oaxaca, 1 ♀ type, Jalapa (*Trujillo*), 1 ♂, Godman-Salvin Coll. *Exp.* 48–50 millim.

7902. **Nymbis lineolaris.** (Plate CCXXIV. fig. 18.)

Noctua lineolaris, Hübn. Eur. Schmett., Noct. f. 454 (1818); Druce, Biol. Centr.-Am., Het. i. p. 385.
Phurys helvina, Druce, Biol. Centr.-Am., Het. i. p. 384 (part.), nec Guen.
Phurys jugis, Druce, Biol. Centr.-Am., Het. i. p. 385 (part.), nec Wlk.

♂. Head, thorax, and abdomen ochreous tinged with brown. Fore wing ochreous tinged with red-brown and slightly irrorated with dark brown; a small round black spot above inner margin before the very oblique black line from lower angle of cell to inner margin before middle, rather diffused on outer side; a slight oblique red-brown discoidal striga; two faint obliquely curved red-brown lines beyond the cell; postmedial line arising from costa towards apex, oblique and slightly incurved, pale yellow defined on inner side by a fine red-brown line and on outer by blackish brown followed by a red-brown band then a rather diffused blackish line; a subterminal series of small black spots on veins 6 to 1; the termen with a faint brown shade and a series of black points; cilia with a dark line near base. Hind wing greyish suffused with brown; a faint oblique brown postmedial line and broad subterminal fuscous shade; a slight terminal line with a series of black points on it; cilia with a fine pale line at base; the underside greyish irrorated with brown, the hair on basal and inner areas tinged with rufous, a dark subterminal shade.

♀. Head, thorax, abdomen, and fore wing greyish suffused with red-brown, the last without the black spot above inner margin, the oblique line arising from upper angle of cell which it crosses; three distinct lines beyond the cell; hind wing reddish brown.

Hab. Mexico, Durango (*Forrer*), 1 ♂; Guatemala, Zapote (*Champion*), 1 ♀; Costa Rica, Candelaria Mts. (*Underwood*), 1 ♀; Panama, Chiriqui (*Champion*), 1 ♂, 1 ♀, Godman-Salvin Coll. *Exp.* 40–44 millim.

7903. **Nymbis jaliscana.** (Plate CCXXIV. fig. 19.)

Phurys jaliscana, Schaus, A. M. N. H. (7) viii. p. 83 (1901).
Poaphila amplissima, Druce, Biol. Centr.-Am., Het. i. p. 382 (part.), nec Wlk.
Phurys dissocians, Druce, Biol. Centr.-Am., Het. i. p. 386 (nec Wlk.).

♂. Head, thorax, and abdomen grey-brown with a slight reddish tinge. Fore wing grey tinged with brown and slightly irrorated with dark brown; a small round black spot above inner margin before the antemedial line, which is whitish, arising at upper angle of cell and obliquely incurved to inner margin before middle, defined on outer side by black-brown, broadly below the cell; two dark discoidal points; two indistinct obliquely incurved brown lines beyond the cell; postmedial line whitish, arising from costa towards apex and obliquely incurved; a broad band of black-brown suffusion beyond it; traces of a waved subterminal line with a series of blackish points at the veins; the terminal area rather greyer with slight brown suffusion at middle of termen and a terminal series of minute black points. Hind wing grey suffused with brown; an indistinct pale postmedial line and faint dark subterminal shade; a terminal series of minute black points; the underside with the hair on basal and inner areas tinged with rufous.

♀. Suffused with pale red-brown; fore wing without the black spot above inner margin, the antemedial line slightly defined on outer side by red-brown, almost erect and slightly sinuous, white points in middle of cell and on discocellulars, a sinuous medial line, the two lines beyond the cell very indistinct, excurved below costa, then waved and less oblique, the postmedial line ochreous, oblique and slightly incurved, with deeper red-brown suffusion beyond it.

Hab. Mexico, Jalapa (*Trujillo*), 1 ♀, Presidio (*Forrer*), 1 ♂, Jalisco, Guerrero, Dos Arroyas (*H. H. Smith*), 1 ♂, Godman-Salvin Coll. *Exp.*, ♂ 50, ♀ 52 millim.

7904. **Nymbis copiola.** (Plate CCXXIV. fig. 20.)

Mocis copiola, Guen. Noct. iii. p. 310 (1852).
Mocis notescens, Wlk. xiv. 1490 (1858).

♂. Head, thorax, and abdomen pale grey-brown, the last with the ventral surface brownish white. Fore wing whitish tinged and irrorated with brown; the costa suffused with brown towards base; faint dark subbasal bars from costa and cell; antemedial line whitish defined on outer side by diffused black-brown, slightly incurved and somewhat angled outwards at the veins; an indistinct sinuous medial line; reniform whitish, very ill-defined, with black on its inner and outer sides at discal fold and a diffused black fascia from its outer edge to the postmedial line; a very indistinct waved dark line just beyond the cell; postmedial line indistinct, blackish, bent inwards at vein 6 to beyond the reniform, then oblique to inner margin, some dark brown suffusion beyond it extending to

apex and a blackish patch below vein 7; an incurved subterminal series of slight blackish points on the veins with a diffused whitish band beyond it; the termen suffused with brown at middle; a slight waved dark terminal line with minute black points at the veins. Hind wing greyish suffused with brown, the terminal area tinged with fuscous; a faint whitish postmedial line from discal fold to tornus; the underside whitish suffused with fuscous brown, the hair on basal and inner areas tinged with rufous, a slight dark subterminal shade.

Hab. Br. Guiana (*Rodway*), 1 ♂; Fr. Guiana; Brazil, Pernambuco (*Ridley*), 1 ♂; Ecuador, Quito (*Bourcier*), 1 ♂ type *notescens*; Paraguay, Sapucay (*Foster*), 1 ♂. *Exp.* 38–44 millim.

7905. **Nymbis flexa.** (Plate CCXXIV. fig. 21.)

Phurys flexa, Guen. Noct. iii. p. 306 (1852).

♂. Head, thorax, and abdomen grey suffused with reddish brown; palpi and legs darker brown. Fore wing grey tinged with red-brown and slightly irrorated with dark brown; a minute round black spot above inner margin before the antemedial line, which is whitish defined on outer side by diffused black-brown, arising at subcostal nervure and inwardly oblique; a black discoidal point; an indistinct slightly sinuous brown line from just before lower angle of cell to inner margin and two indistinct slightly waved obliquely incurved lines beyond the cell; postmedial line grey defined on outer side by diffused black-brown, arising from costa just before apex, oblique to vein 3, then slightly outwardly oblique; traces of a slightly waved subterminal line with a series of blackish points on the veins; the termen slightly suffused with brown at middle; a series of blackish points in the interspaces just before termen and a terminal series on the veins. Hind wing grey suffused with reddish brown; an indistinct brown subterminal shade with faint pale shade before it; a terminal series of minute blackish points; the underside grey tinged and irrorated with brown, the hair on basal and inner areas tinged with rufous.

Hab. ? Haiti; Brazil, Nova Friburgo, 1 ♂. *Exp.* 44 millim.

7906. **Nymbis moxa.** (Plate CCXXIV. fig. 22.)

Phurys moxa, Schaus, Trans. Am. Ent. Soc. xxi. p. 243 (1894), ♂.
Phurys dentilinea, Schaus, A. M. N. H. (7) viii. p. 85 (1901), ♀.
Remigia diffluens, Druce, Biol. Centr.-Am., Het. i. p. 388 (part.), nec Guen.

♂. Head, thorax, and abdomen purplish grey tinged with brown, the patagia with slight dark bar near extremities. Fore wing purplish grey tinged and irrorated with brown; a faint pale subbasal line from costa to submedian fold slightly defined by

brown; a small black spot above inner margin before the antemedial line, which is brown defined on inner side by grey, almost erect; a white point slightly defined by brown in middle of cell; reniform defined by brown, large, slightly angled inwards on median nervure; postmedial line ochreous defined on inner side by a fine red-brown line and on outer by a faint brown shade and minute dark streaks on the veins, slightly sinuous to below vein 7, then obliquely incurved; a subterminal series of small blackish spots on the veins; a faint lunulate blackish line just before the termen and a series of black points on the veins. Hind wing grey suffused with brown, the terminal area darker; an indistinct pale line from costa beyond middle to tornus; a terminal series of minute black points; the underside grey tinged with brown, traces of a postmedial dark line except on inner area.

♀. Fore wing without the antemedial black spot above inner margin, the antemedial line slightly incurved, two dentate brown lines beyond the cell, the postmedial line incurved from costa, defined on outer side by a red-brown line instead of the brown shade and streaks and without the red-brown line on inner side; underside of hind wing whitish thickly irrorated with brown.

Hab. Mexico, Orizaba (*Schaus*), 1 ♂, 1 ♀; Guatemala (*Rodriguez*), 1 ♀, Godman-Salvin Coll. *Exp.* 44 millim.

*7907. **Nymbis candida.** (Plate CCXXIV. fig. 23.)

Celiptera candida, Dogn. Het. Nouv. Am. Sud, vi. p. 26 (1912).

♂. Head, thorax, and abdomen pale brown mixed with whitish; the last with fine white segmental lines. Fore wing pale brown mixed with whitish and slightly irrorated with darker brown; antemedial line brown defined on inner side by whitish, excurved to submedian fold, then oblique, a minute brown spot before it above inner margin; a white point in middle of cell; reniform faintly defined by dark scales, small and strongly constricted at middle; a faint dark medial line, excurved to the reniform and below vein 2; two very indistinct oblique waved brown lines beyond the cell; postmedial line red-brown defined on inner side by whitish, oblique, with series of slight black points on the veins and a series beyond it, before the very faint waved subterminal line; a terminal series of black points. Hind wing pale grey-brown with a faint reddish tinge and some darker brown irroration; an indistinct oblique whitish postmedial line and oblique pale subterminal line from costa just beyond the postmedial line to near termen at vein 3; a terminal series of minute blackish points; the underside pale ochreous irrorated with brown except on basal and inner areas.

Hab. Ecuador, Loja, type † ♂ in Coll. Dognin. *Exp.* 50 millim.

*7908. **Nymbis bigutta.** (Plate CCXXIV. fig. 24.)

Phurys bigutta, Schaus, A. M. N. H. (7) viii. p 84 (1901).

♀. Head, thorax, and abdomen grey suffused with pale brown,

the ventral surface of abdomen irrorated with brown. Fore wing grey suffused with red-brown and slightly irrorated with fuscous; antemedial line brown defined on inner side by whitish, oblique, from subcostal nervure towards end of cell to inner margin; two rather diffused black discoidal points; postmedial line brown defined on outer side by whitish, oblique, from costa towards apex to inner margin, a fuscous shade beyond it, its outer edge forming the subterminal line, arising from apex and slightly excurved at middle, a faint pale line at base of cilia. Hind wing grey tinged and irrorated with brown, the terminal area suffused with fuscous; postmedial line whitish, slightly sinuous, oblique and ending at tornus; a pale line at base of cilia; the underside paler.

Hab. Mexico, Jalapa (*Schaus*), type † ♀ in U.S. Nat. Mus. *Exp.* 42 millim.

*7909. **Nymbis navilla.** (Plate CCXXIV. fig. 25.)

Phurys navilla, Schaus, A. M. N. H. (7) viii. p. 84 (1901).

♀. Head, thorax, and abdomen greyish tinged with red-brown, the legs fuscous brown. Fore wing greyish tinged with red-brown and irrorated with blackish; antemedial line reddish brown, diffused on outer side, almost straight and erect; a white point in middle of cell and dark discoidal point; postmedial line whitish faintly defined on outer side by rufous, straight and oblique from costa towards apex to inner margin towards tornus, a series of black points just beyond it; a series of minute black points just before termen and a terminal series. Hind wing greyish suffused with brown and faintly irrorated with fuscous; a diffused oblique fuscous subterminal shade; a terminal series of minute black points; the underside grey tinged and irrorated with red-brown, a faint diffused curved postmedial line.

Hab. Mexico, Jalapa (*Schaus*), type † ♀ in U.S. Nat. Mus. *Exp.* 42 millim.

*7910. **Nymbis monaxa.** (Plate CCXXIV. fig. 26.)

Phurys monaxa, Schaus, A. M. N. H. (7) viii. p. 84 (1901).

♀. Head and thorax purplish grey mixed with brown; abdomen pale grey-brown. Fore wing purplish grey tinged with red-brown and thickly irrorated with brown; a dark subbasal line from costa to submedian fold; antemedial line dark defined on inner side by whitish, almost straight and erect; a dark discoidal bar faintly defined on inner side by whitish; postmedial line dark brown defined on inner side by whitish, almost straight and erect; a brown dentate subterminal line produced as slight streaks on each side of the veins to the crenulate dark line just before termen. Hind wing ochreous grey suffused with brown; a faint oblique postmedial line and slightly waved dark terminal line; the underside ochreous

suffused and irrorated with reddish brown, an indistinct diffused obliquely curved postmedial line.

Hab. Mexico, Orizaba (*Schaus*), type † ♀ in U.S. Nat. Mus. *Exp.* 40 millim.

*7911. Nymbis dimera. (Plate CCXXIV. fig. 27.)

Celiptera dimera, Dyar, Pr. U.S. Nat. Mus. xlii. p. 77 (1912).

♀. Head, thorax, and abdomen brownish white slightly irrorated with black; palpi thickly irrorated with brown; sides of frons and antennæ brown; legs thickly irrorated with brown, the tarsi blackish ringed with white. Fore wing with the basal half grey-white irrorated with black, the terminal half purplish brown; subbasal line represented by a small black spot on costa; antemedial line blackish with small black spot at costa, excurved below costa and above inner margin; the pale area defined by a black line rather diffused on outer side, excurved at lower angle of cell and oblique towards inner margin; subterminal line grey, excurved below vein 7, angled outwards at middle, then incurved; a terminal series of black points and a series of blackish striæ at base of cilia. Hind wing whitish, the terminal half suffused with rufous; cilia white; the underside whitish faintly tinged with rufous and irrorated with brown except the cell and inner area, a black discoidal point.

Hab. Mexico, Tehuacan (*Müller*), type † ♀ in U.S. Nat. Mus. *Exp.* 30 millim.

Genus **CELIPTERA**.

	Type.
Celiptera, Guen. Noct. iii. p. 308 (1852)	*frustulum*.
Litomitus, Grote, Proc. Ent. Soc. Phil. iii. p. 84 (1864)	*frustulum*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd long; frons smooth with tuft of hair above; eyes large, round; antennæ of male with bristles and cilia; thorax clothed with hair and scales mixed and with ridge-like dorsal crest; tibiæ typically smoothly scaled, the fore tibiæ not spined, the hind tibiæ spined between the mid and terminal spurs only; abdomen with hairy crests on basal segments. Fore wing with the apex somewhat produced and acute; the termen evenly curved and crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about one-third length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Femora and mid and hind tibiæ of male clothed with long hair; hind wing on underside with the basal and inner areas clothed with woolly hair.

A. Hind wing pale yellow, suffused with brown above in female ..... *remigioides*.

B. Hind wing greyish brown.
  a. Fore wing with the antemedial spot above inner margin lunulate.
    a^1. Fore wing grey-brown to purple-brown, the spot above inner margin with its apex not produced to beyond the antemedial line ..... *levina*.
    b^1. Fore wing pale ochreous brown, the spot above inner margin with its apex produced to beyond the antemedial line ..... *cometephora*.
  b. Fore wing with the antemedial spot above inner margin rounded ..... *grisescens*.
  c. Fore wing with the antemedial spot above inner margin ocellate ..... *thericles*.

7912. Celiptera remigioides. (Plate CCXXV. fig. 1.)

Ophiodes remigioides, Guen. Noct. iii. p. 230, pl. 21. f. 5 (1852).
Drasteria magnifica, H. Edw. Papilio, iv. p. 18 (1884); Druce, Biol. Centr.-Am., Het. i. p. 382.
Mocis levina, Druce, Biol. Centr.-Am., Het. i. p. 387 (part.), nec Cram.

♂. Head and thorax ochreous suffused with rufous, the tegulæ with pale line at tips, the patagia with oblique pale line near base and dark line near tips; pectus, legs, and abdomen yellow tinged with rufous. Fore wing ochreous tinged with rufous and with slight dark irroration, the costal edge yellow; an oblique pale subbasal striga from costa on a patch of rufous suffusion; a small round black spot with pale annulus above inner margin before the antemedial line, which is yellow, oblique and very slightly sinuous, a red-brown band beyond it broad at costa and narrowing to inner margin, defined on outer side by a slight double waved line; a white point at middle of costa; reniform slightly defined by brown and with slight dark striga in centre, its outer edge excurved, an oblique band of red-brown suffusion from middle of costa to middle of postmedial line including the reniform; a slight waved dark medial line; a large brown annulus below end of cell, its inner edge indented and its outer edge trifid and with two slight waved lines from it to inner margin; postmedial line red-brown, oblique and sinuous to below vein 7, then inwardly oblique and bent inwards to inner margin, slight blackish streaks beyond it on the veins and a blackish patch above and below vein 5; traces of a pale dentate subterminal line with a red-brown bar before it from costa and a series of black points at the veins; a slight dentate red-brown line just before termen with rufous beyond it. Hind wing pale yellow, the inner area faintly tinged with rufous; a slight postmedial line from discal fold to above tornus, and reddish brown subterminal shade; the underside pale yellow with faint sinuous red-brown postmedial line from costa to vein 6.

♀. Hind wing suffused with brown except the termen.

Hab. Mexico, Jalapa (*Trujillo*), 1 ♂; Guatemala, Las Mercedes (*Champion*), 1 ♀; Costa Rica (*Van Patten*), 1 ♀, Candelaria Mts. (*Underwood*), 1 ♀, Caché (*Rogers*), 1 ♀, Irazu

(*Rogers*), 1 ♂, Godman-Salvin Coll.; PERU, Uruhuasi (*Watkins*), 1 ♀. *Exp.* 60–70 millim.

The species is named *parallelipipeda* on Guenée's plate in error and the locality is given as Centr. India.

7913. Celiptera levina.

Phalæna levina, Stoll, Cram. Pap. Exot. iv. p. 108, pl. 346, f. D (1781); Stoll, Cram. Pap. Exot. v. p. 160, pl. 36. f. 2; Druce, Biol. Centr.-Am., Het. i. p. 387.
Mocis aurinia, Geyer, Zutr. ex. Schmett. 4. p. 30. ff. 729, 730 (1832).
Mocis alvina, Guen. Noct. iii. p. 310 (1852).
Mocis pallidior, Guen. Noct. iii. p. 311 (1852).
Ophiusa variolosa, Wlk. xiv. 1421 (1858).
Mocis pertusa, Feld. Reis. Nov. pl. 115. f. 7 (1874).

♂. Head, thorax, and abdomen red-brown; tegulæ grey at tips; patagia with oblique grey line near base and black line near tips. Fore wing red-brown with slight dark irroration; subbasal line pale defined on inner side by blackish forming a spot below costa, excurved below costa, then oblique and ending at submedian fold; a lunulate black spot, defined by whitish above inner margin before the

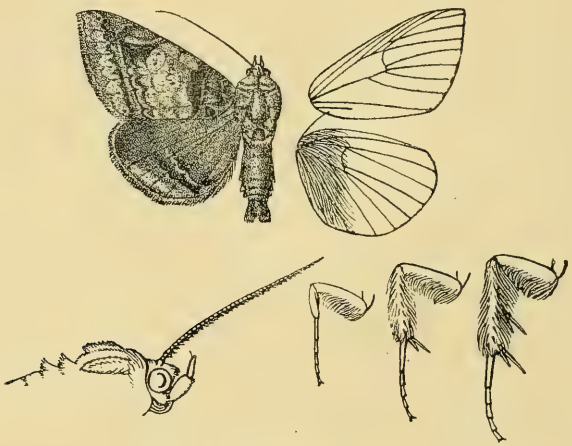


Fig. 36.—*Celiptera levina*, ♂. ½.

antemedial line, which is pale rufous defined by red-brown, somewhat oblique and very slightly excurved to vein 1, then oblique, sinuous and defined on outer side by black which forms a short streak beyond it on inner margin, a dark brown band beyond it defined by a sinuous blackish line incurved below the cell and bent outwards to inner margin; a white point defined by black in middle of cell; reniform defined by red-brown and with black points in upper and lower parts, elliptical, a rather quadrate deep chocolate-brown patch

beyond it; a sinuous brown medial line and two lines beyond the cell oblique towards costa, then inwardly oblique and waved; traces of an annulus below end of cell, excised at middle and with four black points on its edges; postmedial line red-brown, bent outwards below costa, very slightly angled inwards at vein 7, then oblique and defined on inner side by black points on the veins and with a narrow grey band on its outer side defined by a narrow black band arising from costa towards apex, with slightly dentate outer edge and the subterminal series of black points on the veins just beyond it; the termen suffused with red-brown except at apex with slightly waved inner edge; a fine pale line at base of cilia. Hind wing dull reddish brown, the terminal area paler, except towards apex; a slightly waved pale line from vein 4 to tornus defined on inner side by black points and a blackish line towards tornus, a blackish band beyond it followed by subterminal black points on the veins; cilia rufous; the underside uniform glossy grey-brown.

♀. Fore wing with the dark band beyond the antemedial line obsolescent, no dark patch beyond the reniform and the blackish band before the subterminal points slight; underside of hind wing greyish suffused and irrorated with red-brown, traces of a discoidal point and curved postmedial line, a dark subterminal shade.

Ab. 1. *pallidior*. Much greyer brown.

Ab. 2. *alvina*. Fore wing purplish red-brown, the costal area between the postmedial and subterminal lines rufous, the reniform pale grey with faint dark striga in centre, the terminal area of both wings pale grey.

Hab. Mexico, Tabasco, Teapa (*H. H. Smith*), 1 ♂, 1 ♀; Guatemala, Cerro Zunil (*Champion*), 1 ♂, 1 ♀, Pantaleon (*Champion*), 1 ♂, Vera Paz, Cubilguitz (*Champion*), 1 ♀; Costa Rica, Sta. Clara Valley (*Zurcher*), 1 ♂; Panama, Chiriqui (*Ribbé, Champion*), 1 ♂, 1 ♀, Godman-Salvin Coll., La Chorrera (*Dolby-Tyler*), 1 ♀; Jamaica, 1 ♂; Cuba, Baracoa (*Schaus*), 1 ♂, Santiago (*Schaus*), 1 ♀; Haiti (*Tweedie*), 1 ♂ type *variolosa*; Trinidad, Cuparo (*Kaye*), 1 ♂; Colombia, Minca (*H. H. Smith*), 1 ♂, Bogotá (*Stevens*), 1 ♂; Br. Guiana, Demerara (*Rodway*), 1 ♀; Brazil, Amazons, Pará (*Goeldi*), 1 ♂, Theresopolis (*Michaelis*), 1 ♂, Espiritu Santo, 1 ♂. *Exp.* 50–62 millim.

7914. **Celiptera cometephora**, n. sp. (Plate CCXXV. fig. 2.)

♀. Head, thorax, and abdomen pale ochreous brown; tegulæ with slight brown line near tips; patagia with oblique whitish line near base and dark line near tips. Fore wing pale ochreous brown with slight dark irroration; an indistinct pale subbasal line faintly defined by brown from costa to submedian fold; a rather triangular black spot defined by whitish and with its apex produced and curved outwards above inner margin before the antemedial line, which is very indistinct, pale, oblique, sinuous, with traces of a sinuous dark line beyond it, the produced part of the spot

extending to beyond the line; a whitish point in middle of cell; reniform hardly traceable; a very indistinct sinuous brown medial line with black points on and beyond it at vein 2; traces of two waved lines beyond the cell; postmedial line whitish, defined on inner side by a series of black points on the veins, slightly excurved and sinuous below costa, below vein 6 oblique and defined on outer side by a black line followed by a brown line arising from costa towards apex with the double subterminal series of black points on the veins on its outer side; a terminal series of minute black points. Hind wing grey suffused with brown; a faint whitish postmedial line from discal fold to inner margin near tornus with slight black points on its inner side and followed by an indistinct double blackish line; some dark suffusion on costal area towards apex and a slight diffused subterminal line with two black points towards tornus; a terminal series of minute black points; cilia red-brown at tips except towards apex and tornus; the underside whitish suffused with pale red-brown.

Hab. Jamaica (*Hyatt*), 1 ♀ type. *Exp.* 60 millim.

7915. **Celiptera grisescens.** (Plate CCXXV. fig. 3.)

Mocis grisescens, Schaus, A. M. N. H. (7) viii. p. 85 (1901).
Mocis levina, Druce, Biol. Centr.-Am., Het. i. p. 387 (part.), nec Stoll.

Head, thorax, and abdomen grey-brown; patagia with slight dark bars towards extremities; thorax with the dorsal crest pale at tips; pectus with a slight rufous tinge. Fore wing grey-brown; a faint brown subbasal line from costa to submedian fold, excurved below the costa; a round black spot with pale annulus above inner margin before the antemedial line, which is grey defined on outer side by brown and towards inner margin by black-brown, slightly angled outwards below costa, then oblique and slightly incurved; some brownish suffusion beyond it; a minute white spot in middle of cell; reniform defined by brown, elliptical; an oblique brown striga from middle of costa and black points on veins 2 and 1; two slight brown marks on costa above the reniform and two faint oblique waved lines beyond the cell; postmedial line red-brown, bent outwards below costa, very slightly angled inwards at vein 7, then oblique, a series of black and whitish points beyond it and an oblique brown shade arising from costa towards apex; a faint double waved subterminal line with a series of black points on the outer line at the veins; a fine crenulate brown terminal line. Hind wing pale grey-brown; an oblique slightly sinuous brown line from discal fold to tornus faintly defined on outer side by whitish and two indistinct rather diffused subterminal lines; a waved brown terminal line; the underside grey tinged with brown, a faint curved slightly waved postmedial line and traces of a subterminal line.

Hab. Mexico, Jalapa (*Trujillo*, *Schaus*), 1 ♂, 1 ♀; Costa Rica, Caché (*Rogers*), 1 ♂; Guatemala, Volcan de Atitlan (*Champion*), 1 ♂, 1 ♀; Panama, Chiriqui (*Champion*), 1 ♀, Godman-Salvin Coll. *Exp.* 48 millim.

*7916. Celiptera thericles. (Plate CCXXV. fig. 4.)

Thermesia thericles, Schaus, Insec. Inseit. Menstr. i. p. 25 (1913).

♀. Head and tegulæ black-brown mixed with brownish white; thorax brownish grey with two minute black spots at base of patagia and black bars at middle of patagia and on mesothorax; palpi and pectus in front tinged with rufous; abdomen grey tinged with reddish and irrorated with a few black scales, the ventral surface whiter. Fore wing grey with a reddish tinge and irrorated with a few black scales on basal half; the costal edge black with a fine pale streak below it on basal half; a black-brown subbasal patch from costa to submedian fold with the pale waved subbasal line on it; antemedial line white defined on inner side by black-brown and on outer by a black-brown band interrupted at the veins and submedian fold, oblique and slightly sinuous to vein 1, then bent outwards, an incomplete black-brown ocellus with black-brown centre before it above inner margin; a minute black spot in middle of cell and quadrate whitish discoidal patch defined on inner side by a brown line and with brown striga in centre; a double brown medial line from costa to the discoidal patch, oblique and dentate below the cell; another indistinctly double medial line brown filled in in parts with whitish, oblique to vein 7 beyond the cell then waved; postmedial line fine, double, red-brown filled in with white, bent outwards and bidentate below costa, angled inwards and with black spot beyond it at discal fold, then oblique and angled inwards at vein 1; an oblique red-brown subterminal line arising from apex and closely approximated to the postmedial line below vein 7, a series of black points beyond it on the veins and a dentate whitish line before termen; a yellow line at base of cilia. Hind wing grey tinged with brown and irrorated with fuscous except on basal area; four indistinct dark lines on medial area; postmedial line slight, red-brown defined on outer side by white, slightly waved and oblique to submedian fold and bent inwards to inner margin; a brownish subterminal line defined on outer side by grey, followed by a series of black points on the veins with whitish marks beyond them; a yellowish line at base of cilia. Underside of fore wing red-brown with black discoidal bar and subterminal shade; hind wing white irrorated with brown, a black discoidal point, traces of postmedial line and subterminal shade.

Hab. Fr. Guiana, St. Jean Maroni (*Schaus*), type † ♀ in U.S. Nat. Mus. *Exp.* 48 millim.

Sect. II. Femora and tibiæ of male and underside of hind wing smoothly scaled.

A. Fore wing with the postmedial line incurved ..... *valina.*
B. Fore wing with the postmedial line oblique ..... *frustulum.*
C. Fore wing with the postmedial line excurved..... *coão.*

*7917. Celiptera valina. (Plate CCXXV. fig. 5.)

Mocis valina, Schaus, A. M. N. H. (7) viii. p. 86 (1901).

♀. Head and thorax fuscous brown mixed with grey, the pectus

and legs more ochreous; abdomen brown mixed with greyish. Fore wing brownish grey irrorated with dark brown; subbasal line blackish defined on outer side by grey, from costa to submedian fold; antemedial line whitish with a dark brown band on its outer side, oblique and slightly sinuous, confluent on inner side with a black spot defined by whitish above inner margin; a white point in middle of cell; reniform slightly defined by blackish, elliptical, a blackish discoidal striga near its inner edge, confluent with a rounded spot slightly defined by blackish and with pale annulus below angle of cell, its outer edge slightly indented at vein 2; postmedial line blackish and bent outwards below costa, then rufous defined on each side by reddish ochreous and slightly incurved, an incurved blackish shade beyond it arising from costa towards apex followed by a series of black points in the interspaces from below vein 7 to inner margin; a fine waved brown terminal line. Hind wing reddish brown with slight dark irroration except towards base; postmedial line pale, slightly incurved at middle, then excurved to tornus and defined on inner side by a brown line; the termen greyish except towards apex; a fine waved brown terminal line; the underside reddish brown, a slight sinuous dark postmedial line and subterminal shade.

Hab. Mexico, Guadalajara (*Schaus*), type † ♀ in U.S. Nat. Mus. *Exp.* 46 millim.

7918. Celiptera frustulum.

Celiptera frustulum, Guen. Noct. iii. p. 308 (1852); Smith, Cat. Noct. N. Am. p. 355.
Litomitus elongatus, Grote, Proc. Ent. Soc. Phil. iii. p. 85, pl. 2. f. 6 (1864).
Remigia discissa, Wlk. xxxiii. 1009 (1865).

♂. Head, thorax, and abdomen pale grey-brown, the palpi, frontal tuft, and legs tinged with fuscous. Fore wing pale grey-brown with slight dark irroration; an oblique black subbasal bar from costa with slight line from it to submedian fold; an oblique rather triangular black spot defined by whitish above inner margin before the antemedial line which its apex quite or almost touches; antemedial line whitish incompletely defined on outer side by black, oblique, slightly excurved below costa and incurved at vein 1; a minute white point in middle of cell; reniform with slight pale annulus defined by red-brown, elliptical, two oblique striæ above it from costa; a faint annulus below end of cell with black points on its inner and outer sides at vein 2 and a slight waved line from it to inner margin; an indistinct very oblique dark line beyond the cell from costa to vein 7, then waved to inner margin and closely approximated to the postmedial line, which is dark brown, bent outwards below costa and very slightly angled inwards at vein 7, then defined on inner side by whitish and on outer side by reddish ochreous and oblique to inner margin, a dark shade beyond it running obliquely to apex; traces of a pale dentate subterminal line with a series of black points on the veins; a fine crenulate

dark terminal line. Hind wing grey suffused with brown; a slight sinuous brown postmedial line from discal fold to inner margin near tornus, faintly defined on outer side by whitish and followed

Fig. 37.—*Celiptera frustulum*, ♂. ½.

by a dark shade; a fine waved dark terminal line; the underside whitish tinged with brown.

♀. Fore wing with the postmedial line red-brown with slight dark shade beyond it.

Hab. Canada; U.S.A., 1 ♂, 1 ♀, Eastern, Middle, Central, and Southern States, New York, 1 ♂ type *discissa*, Distr. of Columbia, Delaware, Alabama, 1 ♀, Missouri, Philadelphia, 1 ♀, Kansas (*Snow*), 1 ♂, 1 ♀. *Exp.* 40–46 millim.

*7919. Celiptera codo.

Celiptera codo, Dyar, Pr. U.S. Nat. Mus. xlii. p. 79 (1912).

♂. Brown irrorated with blackish. Fore wing with the subbasal line deep black, from costa to submedian fold; antemedial line pale tinged with reddish, defined on outer side by black towards costa, strongly excurved and dentate; orbicular black, round; reniform black, diffused on outer side and angled inwards on median nervure to below the orbicular; postmedial line reddish brown on outer side yellowish on inner, defined on inner side by a blackish line and on outer by a fine yellowish line which is crenulate and produced to points on the veins, the line slightly and evenly curved and followed by a diffused blackish band; the terminal area less strongly irrorated with blackish; a crenulate black terminal line. Hind wing paler at base; a diffused blackish discoidal lunule; traces of a pale postmedial line defined on each side by fuscous; a crenulate black terminal line.

Hab. Mexico, Tehuacan (*Müller*). *Exp.* 40 millim. This species is unknown to me.

Genus **CALYPTIS.**

Type.
Calyptis, Guen. Noct. ii. p. 323 (1852) ..... *iter.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to middle of frons and broadly scaled, the 3rd moderate; frons smooth, with tuft of hair above, in male very narrow, the large round eyes being closely approximated in front; antennæ of male almost simple; thorax clothed with hair and hair-like scales and without crests; tibiæ moderately fringed with hair, the fore and hind tibiæ not spined; abdomen with dorsal crests on basal segments. Fore wing with the apex rounded, the termen typically evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Fore wing with the termen slightly angled at vein 4.

A. Fore wing with the postmedial line incurved from below vein 6 to vein 3, then excurved to vein 1 ..... *idonea.*
B. Fore wing with the postmedial line oblique and waved from below vein 6 to vein 1..... *semicuprea.*

7920. **Calyptis idonea.**

Noctua idonea, Stoll, Cram. Pap. Exot. iv. p. 43, pl. 311. f. A (1780); Feld. Reis. Nov. pl. 110. f. 36.

Head, tegulæ, base of patagia obliquely, and prothorax red-brown, the rest of thorax red-brown tinged with grey; pectus, legs, and

Fig. 38.—*Calyptis idonea*, ♂. ½.

abdomen greyish brown, the tarsi ringed with white. Fore wing pale purplish grey, a conical patch of golden cupreous suffusion

extending on costa from base to near middle and down to vein 1, the whole of the terminal area except small patches on termen above and below middle suffused with golden copper, its inner edge defined by the postmedial line and oblique to vein 6, then obliquely incurved to lower angle of cell and middle of inner margin; subbasal line oblique and white, from costa to median nervure, the area beyond it rather greyer to the antemedial line, which is oblique and white from costa to the orbicular, then defining its outer edge and slightly angled outwards on median nervure, then bent sharply inwards and sinuous and indistinct to inner margin; the orbicular with greyish centre defined by brown, indistinct, slightly angled inwards on median nervure; medial line brown, defined on outer side by white to vein 1, sinuous to middle of cell, then inwardly oblique to vein 1 and double and erect to inner margin; the area between it and the golden postmedial area pale purplish grey irrorated with brown; reniform defined by brown and white at sides, oblique, slightly angled inwards on median nervure; postmedial line oblique and white to vein 6, then brown, excurved at discal fold, then incurved at vein 3, excurved to just above vein 1, then retracted to lower angle of cell, double, slightly sinuous and filled in by whitish to inner margin; subterminal line white, incurved to above vein 6 on which it is angled inwards, with white streak on vein 5, then very faintly double, brown, waved, with black points beyond it above and below vein 4, and defined on outer side by whitish from vein 2 to tornus; a curved white mark before termen from vein 7 to above vein 5, and a series of blackish points just before termen from above vein 6 to below vein 3; a fine white line at base of cilia. Hind wing dark brown with a cupreous gloss; cilia with a fine whitish line at base except towards apex, and whitish patch at discal fold; the underside whitish suffused and thickly irrorated with brown, a curved postmedial line from costa to submedian fold defined on outer side by white, slight white lunules before termen between veins 6 and 3.

Hab. Guatemala (*Rodriguez*), 1 ♂; Panama, Chiriqui (*Champion*), 1 ♀, Godman-Salvin Coll.; Venezuela, 4 ♂; Br. Guiana (*Kaye*, *Rodway*), 1 ♂, 1 ♀; Surinam. *Exp.* 42–56 millim.

7921. **Calyptis semicuprea.** (Plate CCXXIV. fig. 28.)

Plusia semicuprea, Wlk. xv. 1787 (1857).

♀. Head and thorax brown mixed with grey; tarsi slightly ringed with whitish; abdomen grey-brown. Fore wing pale purplish grey suffused and irrorated with brown; a golden cupreous spot on costa near base with an oblique fascia from below it to vein 1 where it is met by a golden cupreous band before the medial line; antemedial line whitish, oblique to the orbicular, which is elliptical and defined by whitish, then bent inwards to submedian fold, and again excurved; antemedial line whitish, sinuous to middle of cell, then inwardly oblique to vein 1 at the antemedial line, then excurved; reniform defined by brown and

white, oblique, slightly angled inwards at median nervure; post-medial line oblique and white to discal fold, then brown and waved to just above vein 1, then retracted and waved to lower angle of cell, then double and filled in with whitish to inner margin, giving off a fork on its inner side at submedian fold; the postmedial area suffused with golden cupreous to vein 2, extending to lower angle of cell and middle of termen; subterminal line white and incurved to above vein 6 on which it is angled inwards, with white streak on vein 5, then indistinct brown and slightly waved, defined on outer side by whitish towards tornus; a minute white streak above extremity of vein 7 and oblique mark below it preceded by some dark marks from below apex to vein 5; cilia with fine white line at base. Hind wing dark brown with a cupreous gloss; cilia with a white line at base; the underside brown irrorated with whitish, traces of slightly waved whitish postmedial and subterminal lines, slight white lunules before termen between veins 6 and 3.

Hab. Brazil, Amazons, R. Jutahi (*Trail*), 1 ♀; Hab. ign., 1 ♀ type. *Exp.* 42–50 millim.

Sect. II. Fore wing with the termen evenly curved.

7922. Calyptis iter.

Calyptis iter, Guen. Noct. ii. p. 324, pl. 12. f. 3 (1852).

Head, tegulæ, base of patagia obliquely, and prothorax red-brown, the tegulæ tipped with white; the rest of thorax and abdomen grey-brown, the patagia with slight rufous bars at middle. Fore

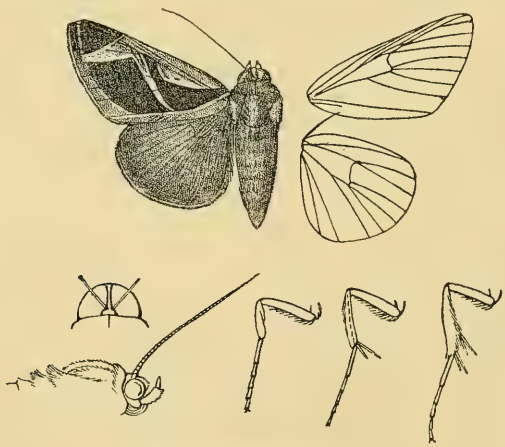


Fig. 39.—*Calyptis iter*, ♂. ½.

wing purplish grey suffused with red-brown; a wedge-shaped deep cupreous patch from base of costa in the submedian interspace to the medial band before which it emits an oblique bar to subcostal

nervure, defined above by a curved white streak and below by a white streak on vein 1 extending to near termen ; two faint oblique antemedial grey striæ from costa ; orbicular very indistinct and oblique, defined on inner side by grey and on outer by the curved white streak ; reniform very narrow and oblique, defined by white and with whitish line in centre, a narrow oblique white medial band from it to vein 1 ; a large deep cupreous apical patch defined below by an oblique white streak to near termen below vein 6, met at vein 6 by a slight white streak from the reniform ; another very large oblong deep cupreous patch beyond the reniform and medial band extending to near termen below vein 5 on which there is a white streak defining its upper edge, its lower edge defined by the white streak on vein 1 ; the postmedial line below vein 6 very indistinct, dark, waved, excurved below vein 3 and just above vein 1 retracted to lower angle of cell and the medial band ; subterminal line white, slightly excurved above vein 6 on the apical patch, below vein 5 faint and forming the outer edge of the cupreous patch ; a white line at base of cilia and line near tips. Hind wing brown with a cupreous gloss ; cilia with whitish line at base and whitish tips ; the underside irrorated with greyish, a curved postmedial line and slight white lunules before termen above and below vein 5.

Hab. Cuba, Baracoa (*Schaus*), 1 ♀ ; Br. Guiana (*Rodway*), 1 ♂ ; Brazil, Amazons, Pará (*Bates*), 1 ♀, Rio Janeiro, 1 ♂ ; Paraguay, Sapucay (*Foster*), 1 ♂. *Exp.* 44–54 millim.

Genus **PLECOPTERODES**, nov.

Type, *P. moderata*.

Proboscis fully developed ; palpi upturned, the 2nd joint reaching to about vertex of head and rather broadly scaled, the 3rd long ; frons smooth, with tuft of hair above ; eyes large, round ; antennæ of male minutely ciliated ; thorax clothed almost entirely with scales and without crests ; tibiæ smoothly scaled, the fore tibiæ not spined, the mid and hind tibiæ spined ; abdomen smoothly scaled and without crests. Fore wing short and broad, the apex rounded, the termen evenly curved and hardly crenulate ; veins 3 and 5 from near angle of cell ; 6 from upper angle ; 9 from 10 anastomosing with 8 to form the areole ; 11 from cell. Hind wing with the cell about half the length of wing ; veins 3, 4 from angle ; 5 fully developed from just above angle ; 6, 7 from upper angle ; 8 anastomosing with the cell near base only.

A. Fore wing with the postmedial line strongly excurved from costa to vein 4, then incurved.
  a. Fore wing with the postmedial line minutely waved.
    a^1. Fore wing with the cilia brown.
      a^2. Fore wing with indistinct medial line excurved beyond the cell ..... *melliflua*.
      b^2. Fore wing without medial line ..... *heterochroa*.
    b^1. Fore wing with the cilia grey-white with brown lines at middle and tips ..... *griseicilia*.
  b. Fore wing with the postmedial line not waved.
    a^1. Hind wing grey-brown ..... *synethes*.
    b^1. Hind wing not grey-brown ..... *moderata*.
B. Fore wing with the postmedial line very slightly excurved from costa to vein 4, then slightly incurved ..... *molybdopasta*.
C. Fore wing without postmedial line ..... *pulchra*.

7923. Plecopterodes melliflua. (Plate CCXXIV. fig. 29.)

Caradrina melliflua, Holl. Donaldson Smith's Unknown Africa, p. 416 (1897).
Chalciope calida, Hmpsn. Ann. S. Afr. Mus. ii. p. 331 (1902).

Head and thorax red-brown slightly mixed with grey; pectus grey; palpi and legs grey-white mixed with black, the tarsi blackish ringed with white; abdomen brown, the ventral surface white irrorated with brown. Fore wing grey suffused with red-brown and irrorated with brown, the terminal area red-brown; a slight dark subbasal line from costa to submedian fold, angled outwards below costa; antemedial line brown defined on inner side by some white scales, slightly angled outwards at the veins; reniform black-brown, narrow and oblique with slight whitish streaks beyond it on the veins; a faint waved brown medial line excurved beyond the cell, then incurved; postmedial line brown slightly defined on outer side by white, with oblique blackish bar from costa, then slight and waved, with blackish points at the veins, excurved below the costa; an oblique pale subterminal line with minute white streaks on it at the veins; cilia fuscous brown, white at tips at apex. Hind wing grey-brown, the terminal area fuscous brown; an indistinct dark postmedial line slightly excurved in submedian interspace; an indistinct pale subterminal line from vein 4 to tornus; a fine waved dark terminal line; cilia grey-brown, white at tips towards apex; the underside grey irrorated with brown, the terminal area suffused with fuscous, a diffused curved postmedial line.

Ab. 1. Fore wing with the reniform not filled in with black.

Ab. 2. *callida*. Smaller; fore wing more uniform red-brown, the reniform not filled in with black.

Ab. 3. Fore wing pale grey-brown tinged with rufous to the subterminal line, the lines without white scales or points, the reniform filled in with black.

Hab. N. Nigeria, Zungeru (*Macfie*), 1 ♂; Abyssinia, Atbara (*Gerrard*), 1 ♂, Sheik Hussein, type † in Coll. Holland; Uganda, Wadelai (*Emin Pasha*), 1 ♂ type *calida*; N.E. Rhodesia, Luangwa Valley (*Neave*), 1 ♂; Rhodesia, Bulawayo (*Marshall*), 1 ♂; Transvaal, Johannesburg (*Cooke*), 1 ♂. *Exp.* 32–42 millim.

7924. Plecopterodes heterochroa.

Remigia heterochroa, Hmpsn. P. Z. S. 1910, p. 426, pl. xxxvii. f. 1.

Head and thorax olive-grey mixed with brown; palpi blackish irrorated with grey; pectus and legs greyer, the tarsi fuscous with pale rings; abdomen grey-brown. Fore wing olive grey-brown irrorated with fuscous; antemedial line blackish, slightly angled outwards below costa, then erect and almost straight; a slight brown discoidal striga; postmedial line indistinctly double, blackish, with small black spot at costa, very minutely waved, excurved to vein 4, then erect; subterminal line brown, straight, bent outwards

to apex and with three black points on it below apex; a crenulate terminal line; cilia fuscous. Hind wing fuscous brown; traces of a nearly straight postmedial line; subterminal line greyish slightly defined on each side by brown, from vein 4 to tornus; a fine waved dark terminal line; the underside grey thickly irrorated with brown and with traces of a curved postmedial line.

Ab. 1. Head, thorax, and fore wing much more rufous and without any olive-brown tinge or dark irroration, the outer postmedial line with white points on it except towards costa.

Ab. 2. Head, thorax, abdomen, and fore wing much darker and tinged with purplish grey, the last with two small black discoidal spots.

Hab. N.W. Rhodesia, Alala Plateau (*Neave*), 2 ♂ type; N.E. Rhodesia, E. Luangwa Distr., Luangwa R., Chambezi Valley, Chinsali Distr. (*Neave*), 1 ♀. *Exp.*, ♂ 34, ♂ 38 millim.

7925. **Plecopterodes griseicilia.**

Remigia griseicilia, Hmpsn. P. Z. S. 1910, p. 427, pl. xxxvii. f. 2.

♂. Head and thorax grey suffused with rufous; palpi blackish irrorated with white; pectus and legs greyer, the tarsi fuscous ringed with white; abdomen pale reddish brown irrorated with fuscous, ventrally greyer. Fore wing pale greyish rufous slightly irrorated with brown, the terminal area deeper rufous; antemedial line indistinct, brown, slightly sinuous; a slight brown discoidal lunule; postmedial line slight, brown with series of black points on it, oblique to vein 6 and below vein 4; subterminal line very indistinct, greyish with slight dark streaks on its outer side, bent outwards to apex, then almost straight; a waved brown terminal line; cilia grey-white with dark lines at middle and tips. Hind wing fuscous brown, the terminal area darker, a faint pale postmedial shade; a fine waved dark terminal line; cilia grey, tinged with brown at base; the underside brownish ochreous irrorated with fuscous, the terminal area suffused with fuscous.

♀. Head, thorax, and fore wing cupreous red.

Hab. N.W. Rhodesia, Alala Plateau, Mkushi Distr. (*Neave*), 1 ♂, 1 ♀ type. *Exp.* 42 millim.

7926. **Plecopterodes synethes**, n. sp. (Plate CCXXIV. fig. 30.)

♀. Head, thorax, and abdomen grey-brown. Fore wing grey-brown irrorated with blackish and tinged with rufous especially on postmedial area; antemedial line fine, dark brown, excurved below costa, then nearly erect and somewhat sinuous, faintly defined on outer side by whitish; faint traces of a medial line excurved beyond the cell, then incurved; postmedial line brown defined on outer side by whitish, excurved below costa and slightly incurved below vein 4; subterminal line indistinct, pale, slightly defined on outer side by fuscous, sinuous; a series of black points before termen; a fine brown terminal line and whitish line at base of cilia. Hind wing

with the basal half brownish grey, the terminal half fuscous; an indistinct oblique whitish medial line; some white on termen at discal fold; cilia white mixed with brown and with a brown line through them. Underside blue-grey irrorated with blackish; fore wing with blackish discoidal bar and slight postmedial curved line with broad band of blackish suffusion beyond it; hind wing with blackish discoidal striga and rather diffused postmedial and subterminal lines.

Hab. Br. E. Africa, Nairobi (*Anderson*), 1 ♀ type. *Exp.* 42 millim.

7927. Plecopterodes moderata.

Grammodes moderata, Wllgrn. Wien. Ent. Mon. iv. p. 174 (1860).
Heliothis variabilis, Mab. Ann. Soc. Ent. Fr. (6) x. p. 39 (1890).
Remigia alypophanes, Beth.-Baker, A. M. N. H. (8) viii. p. 530 (1911).

♂. Head, thorax, and abdomen grey suffused with reddish brown; pectus, legs, and ventral surface of abdomen whitish mixed with brown, the tarsi brown ringed with white. Fore wing with the basal area grey tinged with brown, the rest of wing red-brown; antemedial line dark brown defined on inner side by whitish, erect,

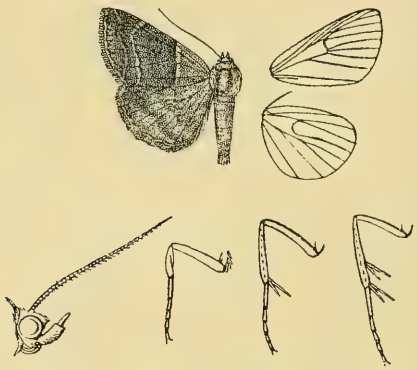


Fig. 40.—*Plecopterodes moderata*, ♂. ½.

very slightly excurved at the veins; reniform a faint elliptical brown mark with white points in upper and lower parts; medial line very indistinct, brown, excurved beyond the cell, then incurved; postmedial line brown defined on outer side by white, oblique to vein 6, then nearly erect; subterminal line pale defined on each side by brown and with whitish points at the veins, excurved at vein 6 and incurved at middle, ending at tornus; a fine waved dark terminal line; cilia grey-brown. Hind wing greyish suffused with pale red-brown; a diffused brown postmedial line and subterminal shade diffused to termen on apical area and slightly incurved at middle; a dark terminal line; cilia grey-brown; the underside paler, the postmedial line curved.

♀. Fore wing wholly grey-brown, the medial line distinct, the postmedial line reduced to dark and white points, the subterminal line with some red-brown suffusion before and beyond it, the terminal line with a series of white points.

Ab. 1. Hind wing with the ground-colour orange.

Ab. 2 ♀. *alypophanes*. Fore and hind wings ochreous brown.

Ab. 3 ♂. *variabilis*. Similar but fore wing with black mark on costa at postmedial line.

Hab. Senegal; Sierra Leone (*Mitford*), 1 ♀; S. Nigeria, Ito (*Christy*), 1 ♀; N. Nigeria, Zungeru (*Macfie*), 1 ♀, Borgu, Yelwa Lake (*Migeod*), 1 ♀; Gaboon (*Dobree*), 1 ♀; Sudan, White Nile (*Dunn*), 1 ♀; Br. E. Africa (*Ansorge*), 1 ♀; Mashonaland, Salisbury (*Marshall*), 1 ♂, 1 ♀; Bechuanaland, Lake N'Gami (*Lugard*), 1 ♀; Damaraland, Ovampo L., 1 ♂; Rhodesia, Bulawayo (*Marshall*), 1 ♂; Lorenço Marques, Delagoa Bay (*Monteiro*), 1 ♂; Transvaal, Karino (*Cooke*), 1 ♀, White R. (*Cooke*), 1 ♂, 2 ♀; Cape Colony, Annshaw (*Miss F. Barrett*), 2 ♂. *Exp.* 34–42 millim. Type † ♀ in Mus. Stockholm.

7928. **Plecopterodes molybdopasta.**

Remigia molybdopasta, Hmpsn. P. Z. S. 1910, p. 427, pl. xxxvii. f. 3.

♀. Head and thorax brown suffused with fuscous; palpi at base, pectus and legs whitish, the tarsi black ringed with white; abdomen red-brown, ventrally whitish. Fore wing fuscous brown suffused with silvery blue especially on costal area to beyond middle, the postmedial area pale reddish brown, whitish at costa; a sinuous black subbasal line from costa to submedian fold; antemedial line black, expanding into a bar at costa, obliquely excurved and slightly sinuous; a faint blackish discoidal lunule; postmedial line black, expanding into a spot at costa, slightly incurved below vein 3; a faint dark subterminal shade towards costa; cilia with some grey at base. Hind wing pale rufous, the basal area tinged with brown, the terminal area suffused with brown; an oblique brown medial line; an oblique rufous subterminal bar from vein 4 to 1; the underside ochreous yellow, a blackish discoidal point, faint oblique postmedial line with some dark points on it, the terminal area suffused with fuscous narrowing to a point at vein 1.

Ab. 1. Fore wing wholly suffused with silvery blue, the postmedial area hardly paler; hind wing darker.

Hab. N.W. Rhodesia, Alala Plateau, Ndola Distr. (*Neave*), 2 ♀ type. *Exp.* 40 millim.

7929. **Plecopterodes pulchra.**

Noctua pulcra, Fabr. Ent. Syst. iii. (2) p. 35 (1794).
Capnodes tetraspila, Wlk. xxxiii. 1076 (1865); Hmpsn. Ill. Het. B.M. ix. p. 116, pl. 166. f. 2; id. Moths Ind. ii. p. 529.

♂. Head, thorax, and abdomen yellow tinged with flesh-red; tegulæ velvety black except at base; antennæ blackish except at

base; fore femora black above; tarsi fuscous brown. Fore wing yellow tinged with flesh-colour; a small fuscous black triangular spot on costa above end of cell connected with a curved deep black discoidal striga somewhat dilated above; an oblique fuscous black apical spot. Hind wing yellow faintly tinged with fiery red except on costal area; a small fuscous patch at apex.

♀. Fore wing very faintly striated with brown.

Hab. Madras (*Watson*), 1 ♂; Ceylon, 1 ♀ type *tetraspila*. *Exp.* 32 millim.

Genus **GONODONTODES**, nov.

Type, *G. dispar*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd rather long; frons smooth, with tuft of hair above; eyes large, round; antennæ of male pectinate with rather long branches, the apex ciliated; thorax clothed with hair and hair-like scales and without crests; tibiæ moderately fringed with hair, the fore tibiæ not spined, the hind tibiæ spined; abdomen dorsally clothed with woolly hair at base but without crests. Fore wing short and broad, the apex not produced, the termen not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the termen somewhat excurved at middle; the cell about one-third length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Fore wing with the termen excised below apex and excurved at vein 5.

7930. **Gonodontodes chionosticta**, n. sp.

Head and thorax bright red-brown; antennæ with the basal joint white on outer side; palpi, pectus, and legs grey-brown; abdomen grey-brown dorsally tinged with red-brown. Fore wing bright

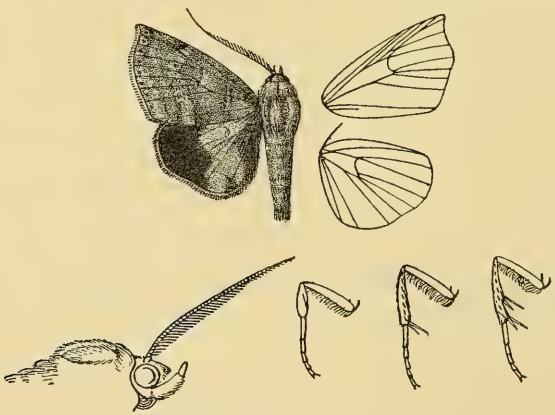


Fig. 41.—*Gonodontodes chionosticta*, ♂. 1/1.

glossy red-brown, irrorated with a few white scales; a small silvery white spot at base; antemedial line very indistinct, double, brown,

diffused, slightly excurved below the costa; two faint dark discoidal points; medial line very indistinct, brown, diffused, excurved beyond the cell; an indistinct double diffused slightly waved brown subterminal line; a series of black points before termen defined by white scales; cilia white at tips. Hind wing black-brown, the hair on inner margin whitish except towards base; a broad orange-yellow band from costa before middle to termen at submedian fold, its outer edge excurved beyond the cell and slightly angled before termen; cilia red-brown, white at tips; the underside grey tinged with red-brown, especially on terminal area from costa to vein 2, and irrorated with dark brown, the inner area yellowish, an indistinct dark postmedial line excurved from costa to vein 2, and series of minute blackish points before termen.

Ab. 1. Fore wing with somewhat lunulate black discoidal spot and oblique black line from below apex to vein 3.

Hab. Jamaica (*Sturridge*, *Martin*), 1 ♂, 2 ♀ type. *Exp.* ♂ 42, ♀ 54 millim.

Sect. II. Fore wing with the termen evenly curved.

7931. Gonodontodes dispar.

Noctua dispar, Herr.-Schäff. Corresp.-blatt. zool.-min. Ver. Regensb. xxii. p. 181 (1868).

♂. Head, thorax, and abdomen pale grey-brown with a slight reddish tinge; palpi, pectus, legs, and ventral surface of abdomen

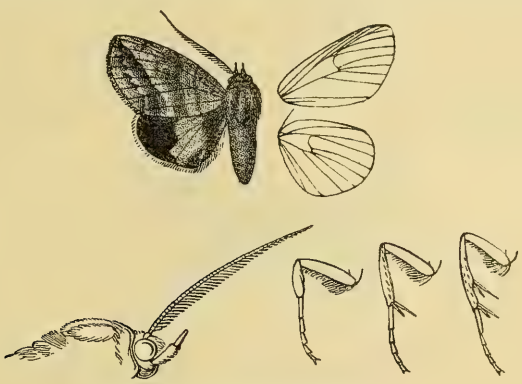


Fig. 42.—*Gonodontodes dispar*, ♂. ½.

grey mixed with brown, the tarsi blackish with pale rings. Fore wing pale grey-brown with a slight reddish tinge and some black irroration; subbasal line represented by some blackish scales from costa to submedian fold; antemedial line very indistinct, dark, diffused, slightly excurved; two blackish discoidal points; medial line very indistinct, dark, diffused, excurved beyond the cell; a faint oblique dark postmedial bar from costa; an obliquely incurved

black-brown line from apex, indistinct and double from vein 3 to inner margin; traces of a pale waved subterminal line from vein 6 to inner margin with some blackish scales on its outer edge; a series of minute black points before termen. Hind wing with the basal area reddish brown, its outer edge oblique to inner margin beyond middle, followed by a broad orange-yellow band from costa before middle to inner margin and termen near tornus where it encloses a brown patch, its outer edge excurved beyond the cell and angled before termen; the apical area black-brown; cilia greyish brown; the underside grey thickly irrorated with blackish except on inner area, a series of slight black points before termen.

Hab. CUBA, Santiago (*Schaus*), 1 ♂. *Exp.* 38 millim.

Genus **FOCILLIDIA**, nov.

Type, *F. texana*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to above vertex of head and moderately scaled, the 3rd long and acuminate; frons smooth; eyes large, round; antennæ of male typically bipectinate with short branches; thorax clothed almost entirely with scales and without crest; fore tibiæ not spined, the hind tibiæ spined between the mid and hind spurs only; abdomen smoothly scaled and without crests. Fore wing with the apex somewhat produced and acute, the termen excised below apex and excurved at middle, slightly in male, strongly in female, and crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

SECT. I. Antennæ of male bipectinate with short branches.

7932. **Focillidia texana**, n. sp.

♀. Head, thorax, and abdomen ochreous white tinged with rufous; antennæ ringed with blackish; palpi with the 3rd joint

Fig. 43.—*Focillidia texana*, ♂. ¾.

blackish except at tips; pectus and legs ochreous white irrorated with brown, the fore legs tinged with fuscous in front. Fore wing

ochreous tinged with rufous and irrorated with pale brown; a subbasal dark striga from costa; antemedial line indistinct, dark, waved, defined on inner side by whitish towards costa; two black discoidal points; medial line dark, waved, excurved beyond the cell, ending at vein 2; postmedial line dark, defined on outer side by white except towards inner margin, waved, oblique to vein 6, bent inwards at submedian fold to below the medial line, the costa beyond it with alternating white and blackish streaks; a slight dark subterminal shade faintly defined on outer side by whitish; a crenulate blackish terminal line with black points at the interspaces; cilia white, brownish at base and with dark patch at middle. Hind wing ochreous white tinged with rufous and faintly irrorated with brown; a rather diffused curved dark medial line, minutely waved, curved postmedial line, slight subterminal shade and crenulate blackish terminal line with black points at the interspaces; cilia white faintly tinged with brown at base; the underside creamy white slightly irrorated with brown, a black discoidal lunule, slightly waved medial line, minutely waved postmedial line, slight subterminal shade and series of black points before termen.

Ab. 1. Much browner.

Hab. U.S.A., 1 ♀ type, Grote Coll., Texas, Brownsville, Esper Ranch, 1 ♀, ♂ in Coll. J. B. Smith. *Exp.* 28–36 millim.

Sect. II. Antennæ of male with long bristles and cilia.

A. Fore wing with the termen strongly excurved, almost angled at vein 4.

7933. Focillidia bipunctata.

Thermesia bipunctata, Wlk. xxxiii. 1048 (1865).

♂. Head, thorax, and abdomen pale reddish brown; antennæ

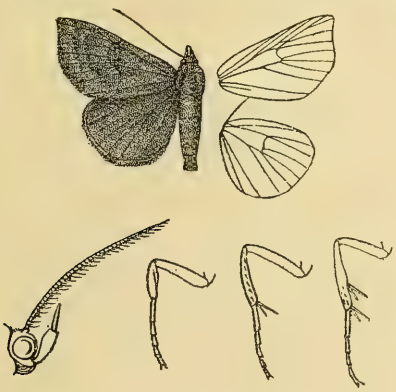


Fig. 44.—*Focillidia bipunctata*, ♂. ½.

ringed whitish and fuscous; palpi tinged with fuscous, whitish in front; pectus, legs, and ventral surface of abdomen whitish mixed

with brown. Fore wing pale reddish brown tinged with grey and with slight dark irroration; antemedial line slight, dark, obliquely excurved from costa to submedian fold, then erect and slightly incurved at vein 1; two black discoidal points; traces of a rather diffused dark medial line, excurved to vein 3, then bent inwards to below end of cell and sinuous to inner margin; postmedial line dark, slightly defined on outer side by whitish towards costa and with slight white points on its outer edge at veins 7 and 6, oblique to vein 6, somewhat incurved at discal fold and oblique to below vein 4, some whitish points beyond it on costa; traces of a pale subterminal line with faint dark suffusion on its inner side, slightly waved. Hind wing pale reddish brown tinged with grey; an indistinct curved dark postmedial line; cilia white at tips. Underside of fore wing with the postmedial line evenly curved and punctiform, the terminal area whitish with a series of dark points before termen; hind wing whitish irrorated with brown, a black discoidal point, indistinct sinuous medial line, curved punctiform postmedial line, and series of points before termen.

♀. Fore wing usually with small white spots on the outer edge of the postmedial line at veins 6, 5, 4, 3; hind wing with traces of white points on outer side of the postmedial line at the veins.

Hab. Mexico, Coatepec (*Schaus*), 1 ♂, Vera Cruz, Paso San Juan (*Schaus*), 1 ♀, Guerrero, Venta de Zopilote (*H. H. Smith*), 1 ♂; Costa Rica, Irazu (*Rogers*), 2 ♂, 1 ♀; Panama, Chiriqui (*Ribbé*), 1 ♂, 1 ♀, Godman-Salvin Coll.; Brazil, Amazons, Ega (*Bates*), 1 ♂ type. *Exp.* 32–38 millim.

B. Fore wing with the termen slightly excurved at middle.

7934. **Focillidia grenadensis**, n. sp.

♂. Head, thorax, and abdomen pale reddish brown, the last

Fig. 45.—*Focillidia grenadensis*, ♂. ½.

greyer; antennæ ringed fuscous and whitish; palpi tinged with fuscous, the 2nd joint in front and tip of 3rd joint whitish; pectus

and legs brown mixed with whitish. Fore wing pale reddish brown tinged with grey and with slight dark irroration; a very indistinct dark antemedial line, oblique to median nervure, then inwardly oblique; two slight dark discoidal points; a very indistinct medial line, slightly excurved beyond the cell; an indistinct dark postmedial line, oblique to vein 6, then slightly waved, oblique below vein 4, some white points beyond it on costa; a very indistinct pale waved subterminal line slightly defined on inner side by fuscous; a series of blackish points before termen. Hind wing pale reddish brown, the terminal area grey-brown; faint traces of a subterminal line; cilia whitish at tips. Underside of fore wing grey irrorated with fuscous brown, a dark subterminal shade diffused on inner side, the area beyond it white; hind wing whitish irrorated with brown, a black discoidal point, diffused curved medial line, faint curved postmedial line, subterminal shade, and series of black points before termen.

Hab. Grenada (*H. H. Smith*), 1 ♂ type. *Exp.* 28 millim.

Genus **ARGYROSTROTIS.***

	Type.
Agnomonia, Hübn. Zutr. iii. p. 10 (1825), non descr.	*anilis.*
Argyrostrotis, Hübn. Verz. p. 253 (1827)	*anilis.*
Poaphila, Guen. Noct. iii. p. 299 (1852)	*deleta.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and moderately scaled, the 3rd moderate; frons smooth, with tuft of hair above; eyes large, round; antennæ of male ciliated; thorax clothed with hair and scales mixed and without crests; tibiæ smoothly scaled, the fore and hind tibiæ not spined; abdomen smoothly scaled and without crests. Fore wing with the apex somewhat produced and acute, the termen evenly curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the ground-colour grey.
- *a*. Fore wing with the postmedial line excurved to vein 4, then incurved ..... *surrufula.*
- *b*. Fore wing with the postmedial line erect ..... *bucetum.*
- *c*. Fore wing with the postmedial line oblique.
  - a^1. Fore wing with the area beyond the postmedial line not broadly suffused with red-brown.
    - a^2. Fore wing with the antemedial line white and nearly straight ..... *pacalis.*
    - b^2. Fore wing with the antemedial line indistinct, dark, waved.
      - a^3. Fore wing with short black streaks beyond the postmedial line above and below vein 5 ..... *diffundens.*
      - b^3. Fore wing without black streaks beyond the postmedial line ..... *herbicola.*
  - b^1. Fore wing with the area beyond the postmedial line broadly suffused with red-brown ..... *sylvarum.*

* This name was used Cat. Lep. Phal. B. M. vii. p. 517 in error for *Argyrosticta.*

B. Fore wing with the ground-colour red-brown.
  a. Fore wing with the antemedial line not white.
    a^1. Fore wing with the antemedial line indistinct, dark, waved.
      a^2. Fore wing with the postmedial line dentate and strongly excurved beyond the cell ... . *erasa*.
      b^2. Fore wing with the postmedial line slightly waved and approximated to the cell.
        a^3. Fore wing with the cilia not white at tips ..... *contempta*.
        b^3. Fore wing with the cilia white at tips ..... *deleta*.
    b^1. Fore wing with the antemedial line indistinct, oblique, straight ..... *obsoleta*.
  b. Fore wing with the antemedial line white.
    a^1. Fore wing with the postmedial line white and straight throughout ..... *quadrifilaris*.
    b^1. Fore wing with the postmedial line white and oblique to vein 6, then indistinct, dark, and incurved below vein 3 ..... *anilis*.

*7935. **Argyrostrotis surrufula.** (Plate CCXXXII. fig. 31).

Celiptera surrufula, Dyar, Proc. U. S. Nat. Mus. xliv. p. 299 (1913).

♂. Head, thorax, and abdomen pale violaceous grey. Fore wing pale violaceous grey; antemedial line rather diffused, blackish, angled outwards below costa and at median nervure; reniform a small blackish lunule; postmedial line blackish, excurved below costa, then waved and defined on outer side by white points, incurved below vein 4, patches of fuscous suffusion beyond it at discal and submedian interspaces; a subterminal series of black points and a terminal series of black striæ. Hind wing grey tinged with red-brown; a terminal series of black striæ.

Hab. Mexico, San Luis Potosi, Cerritos (*Müller*). *Exp.* 34 millim. This species is unknown to me, figured from a drawing from type in U.S. Nat. Mus.

*7936. **Argyrostrotis bucetum.** (Plate CCXXIV. fig. 31.)

Celiptera bucetum, Grote, Trans. Kansas Ac. Sci. viii. p. 50 (1883); Smith, Cat. Noct. N. Am. p. 356.

♀. Head and thorax purple-grey tinged with brown; palpi dark brown; pectus grey tinged with brown; legs brown mixed with grey; abdomen red-brown tinged with grey. Fore wing purple-grey tinged with brown and irrorated with dark brown; antemedial line indistinct, brown, faintly defined on inner side by whitish scales, oblique, sinuous; a slight dark discoidal lunule; postmedial line reddish ochreous defined on each side by dark brown, erect and nearly straight; subterminal line indistinct, brown, defined on inner side by grey, minutely waved; a terminal series of slight dark striæ; cilia with a faint brown line near base. Hind wing reddish brown tinged with grey; a fine dark terminal line; cilia paler; the underside pale red-brown irrorated with dark brown.

Hab. U.S.A., New Mexico, Arizona (*Poling*) in Coll. W. Barnes. *Exp.* 40 millim.

7937. **Argyrostrotis pacalis.** (Plate CCXXIV. fig. 32.)

Poaphila pacalis, Wlk. xiv. 1475 (1858); Smith, Cat. Noct. N. Am. p. 359.
Poaphila irrorata, Grote, Bull. Geol. Surv. Terr. iv. p. 185 (1878).

♂. Head and thorax pale grey irrorated with black; palpi and frons browner; fore and mid legs suffused with fuscous in front; abdomen grey-white irrorated with brown, ventrally tinged with brown. Fore wing pale grey irrorated with black-brown, the costal edge white; antemedial line whitish defined on outer side by black, slightly sinuous; two small black discoidal spots; postmedial line whitish, slightly defined on inner side by blackish, on outer side by black marks above and below vein 5 and at submedian fold, excurved below costa and oblique below vein 4; a subterminal series of small black spots and a terminal series of black points. Hind wing grey-white thickly irrorated with brown; a slight dark terminal line; the underside with slight dark discoidal spot and terminal series of black striæ.

♀. Fore wing more thickly irrorated with black-brown, the lines whiter and not defined by blackish.

Hab. U.S.A., Florida (*Doubleday*), 1 ♂ type, 1 ♀ type *irrorata*, Grote Coll. *Exp.* 36 millim.

7938. **Argyrostrotis diffundens.** (Plate CCXXVI. fig. 1.)

Mocis diffundens, Wlk. xiv. 1491 (1858).

♂. Head, thorax, and abdomen grey-brown; palpi, fore and mid legs fuscous brown. Fore wing grey tinged with brown and irrorated with black-brown; an indistinct sinuous curved antemedial line; a small black discoidal spot; postmedial line indistinct, brown, excurved below costa, then obliquely incurved and slightly waved, with short black streaks beyond it above and below vein 5, a black spot on its outer side at inner margin; an oblique blackish shade from apex; a series of black points just before termen. Hind wing grey suffused with brown; a slight dark terminal line; the underside grey thickly irrorated with brown, a small blackish discoidal spot, indistinct curved postmedial line, and terminal series of small black spots.

Hab. U.S.A., 1 ♂, Grote Coll.; Hab. ign., 1 ♂ type. *Exp.* 40 millim.

7939. **Argyrostrotis herbicola.** (Plate CCXXVI. fig. 2.)

Poaphila herbicola, Guen. Noct. iii. p. 301 (1852); Smith, Cat. Noct. N. Am. p. 359.

♂. Head, thorax, and abdomen grey suffused with brown; palpi and frons brown, the latter with a white bar above; legs brown, the tarsi ringed with white. Fore wing with the basal area grey

irrorated with brown, the rest of wing grey suffused with brown; antemedial line indistinct, brown, excurved in submedian interspace; reniform small, defined by dark brown; postmedial line dark brown, excurved below costa, then obliquely incurved; a slight oblique dark shade from apex; a crenulate blackish terminal line angled inwards to black points in the interspaces. Hind wing grey suffused with cupreous brown; a waved dark terminal line; the underside whitish irrorated with brown, the costal area tinged with red-brown, a blackish discoidal point, minutely waved postmedial brown line, and series of black points before termen.

Hab. U.S.A., Southern States, 1 ♂, Grote Coll. *Exp.* 36 millim.

7940. **Argyrostrotis sylvarum.** (Plate CCXXVI. fig. 3.)

Poaphila sylvarum, Guen. Noct. iii. p. 300, pl. xxiii. f. 2 (1852); Smith, Cat. Noct. N. Am. p. 358.

♂. Head and thorax red-brown tinged with grey; palpi, pectus, and legs red-brown; abdomen red-brown, the ventral surface whitish irrorated with brown. Fore wing purple-grey tinged with red-brown and slightly irrorated with brown; antemedial line whitish, defined on outer side by diffused red-brown, oblique; a dark discoidal lunule with some brown on its outer side; postmedial line red-brown, with a broad band of red-brown suffusion beyond it, excurved below costa, then oblique; subterminal line dark, closely approximated to the postmedial line and showing faintly on the red-brown suffusion, incurved at discal fold and angled outwards at veins 4, 3; a series of black points just before termen. Hind wing red-brown; a faint medial line incurved below vein 4, dark postmedial shade, a terminal series of black points; cilia whitish at tips; the underside paler red-brown with some dark irroration, the markings more distinct, a small blackish discoidal lunule.

Hab. U.S.A., Southern States, 3 ♂. *Exp.* 36 millim.

7941. **Argyrostrotis erasa.** (Plate CCXXVI. fig. 4.)

Poaphila erasa, Guen. Noct. iii. p. 301 (1852); Smith, Cat. Noct. N. Am. p. 359.

♂. Head and thorax red-brown tinged with grey; palpi and legs brown; abdomen grey suffused with red-brown. Fore wing red-brown mixed with greyish, the terminal area cupreous red-brown; antemedial line indistinct, brown, waved; a slight brown discoidal lunule; postmedial line indistinct, brown, dentate, strongly incurved below vein 4; subterminal line faintly indicated by the contrast between the postmedial and terminal areas; cilia dark red-brown at base, pure white at tips except at apex and tornus. Hind wing red-brown, the terminal area cupreous brown; cilia red-brown at

base, white at tips; the underside whitish suffused and irrorated with red-brown, traces of diffused postmedial and subterminal brown lines.

Hab. U.S.A., Southern States, 2 ♂. *Exp.* 36–40 millim.

7942. **Argyrostrotis contempta.** (Plate CCXXVI. fig. 5.)

Poaphila contempta, Guen. Noct. iii. p. 302 (1852); Smith, Cat. Noct. N. Am. p. 358.

Poaphila placata, Grote, Bull. Geol. Geog. Surv. Terr. iv. p. 184 (1878); Smith, Cat. Noct. N. Am. p. 359.

Head, thorax, and abdomen bright red-brown; antennæ with the shaft white above. Fore wing bright red-brown; antemedial line very indistinct, brown, excurved and slightly waved; traces of a brown discoidal bar; postmedial line indistinct, brown, oblique, waved; traces of an oblique sinuous subterminal line; a slight dark terminal line. Hind wing bright red-brown, with a slight dark terminal line; the underside somewhat greyer with slight discoidal striga and traces of diffused postmedial and subterminal lines.

Hab. U.S.A., Southern States, Georgia, 2 ♂, 2 ♀ type *placata*, Florida (*Doubleday*), 1 ♀. *Exp.* 26–30 millim.

7943. **Argyrostrotis deleta.**

Poaphila deleta, Guen. Noct. iii. p. 300 (1852); Smith, Cat. Noct. N. Am. p. 358.

♂. Head, thorax, and abdomen bright red-brown; antennæ with the shaft white above. Fore wing bright red-brown, the terminal area with faint greyish irroration; antemedial line indistinct, brown,

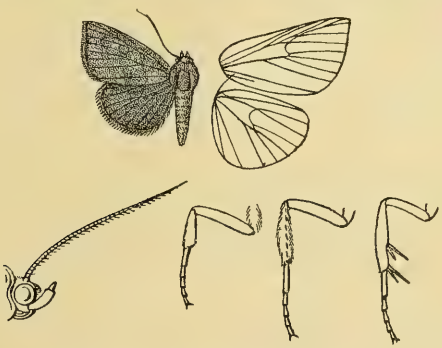


Fig. 46.—*Argyrostrotis deleta*, ♂. $\frac{1}{1}$.

faintly defined on each side by rufous, excurved and slightly waved; a slight dark discoidal lunule; postmedial line just beyond the

cell, very indistinct and slightly defined on outer side by rufous, somewhat excurved to vein 3, then incurved; traces of an oblique sinuous subterminal line; cilia white at tips. Hind wing bright red-brown, the cilia whitish at tips; the underside greyish suffused and irrorated with red-brown.

Hab. U.S.A., Southern States, 1 ♂, Florida (*Doubleday*), 1 ♂. *Exp.* 30 millim.

7944. **Argyrostrotis obsoleta.** (Plate CCXXVI. fig. 6.)

Poaphila obsoleta, Grote, Check-List, p. 42 (1876); Smith, Cat. Noct. N. Am. p. 358.

Head, thorax, and abdomen bright red-brown; antennæ with the shaft white above. Fore wing bright red-brown, the costal edge white except towards base; an indistinct oblique brown antemedial line; postmedial line indistinct, brown, inwardly oblique; cilia pure white except at base. Hind wing bright red-brown; cilia white at tips at middle above only.

Hab. U.S.A., Southern States, Georgia, 1 ♂, Florida (*Doubleday*), 3 ♀, Enterprise, 1 ♀ type. *Exp.* 34 millim.

7945. **Argyrostrotis quadrifilaris.** (Plate CCXXVI. fig. 7.)

Agnomonia quadrifilaris, Hübn. Zutr. Ex. Schmett. iii. p. 37, ff. 569, 570 (1825); Smith, Cat. Noct. N. Am. p. 358.

Head, thorax, and abdomen deep red-brown; antennæ with the shaft white above. Fore wing bright red-brown, the costal edge white except towards base; antemedial line pure white, oblique; postmedial line pure white, inwardly oblique; cilia pure white at tips except towards tornus. Hind wing deep red-brown, the terminal area brighter red-brown except towards tornus; cilia paler; the underside deep red-brown, the terminal area pale red-brown.

Hab. U.S.A., Massachusetts, New York, 3 ♂, 3 ♀, Pennsylvania, 1 ♀, Florida (*Doubleday*), 1 ♂, 2 ♀. *Exp.* 32–36 millim.

7946. **Argyrostrotis anilis.** (Plate CCXXVI. fig. 8.)

Noctua anilis, Drury, Ill. Exot. Ins. ii. p. 21, pl. 12. f. 3 (1797); Smith, Cat. Noct. N. Am. p. 360.
Agnomonia sequistriaris, Hübn. Zutr. Ex. Schmett. iii. p. 10, ff. 419, 420 (1825).

Head, thorax, and abdomen bright red-brown; antennæ with the shaft white above. Fore wing bright red-brown; a narrow oblique white band from costa before middle to inner margin towards tornus; postmedial line oblique and white to vein 6, then indistinct and brown, incurved below vein 3 and reaching inner margin just beyond the oblique band; cilia white with a slight red-brown line at middle. Hind wing pale red-brown with a greyish gloss;

cilia white with a slight red-brown line at middle; the underside irrorated with white, with a curved postmedial line.

Hab. U.S.A., Middle and Southern States, 2 ♂, 1 ♀, Georgia, 2 ♂, Florida (*Doubleday*), 2 ♂, Kansas (*Snow*), 1 ♂, 1 ♀, Texas, 2 ♂. *Exp.* 34–36 millim.

Genus **CUTINA.**

Type.
Cutina, Wlk. xxxv. 1734 (1866) .... *albopunctella.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and broadly fringed with hair in front, the 3rd moderate; frons smooth; eyes large, round; antennæ of male ciliated; thorax clothed almost entirely with scales and without crests; build slender; tibiæ slightly fringed with hair, the mid tibiæ spined, the fore and hind tibiæ not spined; abdomen smoothly scaled and without crests. Fore wing narrow, the apex produced and acute, the termen somewhat excised below apex and excurved at middle, not crenulate; veins 3 and 5 from near angle of cell, 6 from upper angle, 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

7947. Cutina albopunctella.

Cutina albopunctella, Wlk. xxxv. 1735 (1866); Smith, Cat. Noct. N. Am. p. 194.
Erastria strigulataria, Smith, J. N.Y. Ent. Soc. viii. p. 173 (1900); Dyar, Cat. Lep. N. Am. p. 209.

♂. Head and thorax grey-white mixed with some pale red-brown; abdomen grey-white tinged with red-brown. Fore wing

Fig. 47.—*Cutina albopunctella*, ♂. ½.

grey-white, the interspaces suffused and irrorated with red-brown, leaving rather diffused white streaks on the veins; antemedial line very indistinctly marked by black scales, dentate, connected by a

slight streak with the postmedial line at vein 2; a slight black streak in discal fold from end of cell to the postmedial line, which is indistinctly marked by black scales, dentate, oblique to vein 5, then inwardly oblique to the submedian fold and angled outwards at vein 1, some white points beyond it on costa; subterminal line white, oblique towards costa, then dentate, excurved at middle; a terminal series of black and white points; cilia red-brown, intersected by white streaks at base and chequered with white at tips. Hind wing pale red-brown; a terminal series of black points; cilia whitish at tips; the underside violaceous white irrorated with red-brown, a black discoidal spot and terminal series of black points.

Hab. U.S.A. (*Doubleday*), 1 ♂ type, Florida. *Exp.* 32 millim.

Genus **CYMOSAFIA**, nov.

Type, *C. laba.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to above middle of frons with an oblique ridge of scales at middle, the 3rd moderate, thickly scaled; frons smooth; eyes large, round; antennæ of male ciliated; thorax clothed with scales and hair mixed; the metathorax with depressed crest; fore tibiæ fringed with long hair, the mid and hind tibiæ moderately fringed with hair, the mid tibiæ of male dilated with a groove containing a tuft of hair, the fore and hind tibiæ not spined; abdomen smoothly scaled and without crests. Fore wing with the apex rounded, the termen crenulate, produced at veins 6 and 4, then oblique; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the termen crenulate and somewhat produced at veins 6 and 4; the cell nearly half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing on underside with the postmedial line incurved from costa to vein 5 ..... *pallida.*
B. Fore wing on underside with the postmedial line excurved and waved from costa to vein 5 ..... *laba.*

7948. **Cymosafia pallida**, n. sp. (Plate CCXXV. fig. 9.)

Head and thorax ochreous whitish tinged with red-brown; palpi with black band on 1st joint and red-brown bands on 2nd and 3rd joints; pectus and legs ochreous white irrorated with brown; abdomen ochreous white tinged with red-brown and with dorsal series of slight dark points, the ventral surface white. Fore wing ochreous white tinged with red-brown and slightly irrorated with dark brown; a curved whitish subbasal striga from costa defined on inner side by brown; antemedial line indistinct, whitish, incompletely defined on outer side by black-brown, angled outwards below costa and inwards on median nervure and vein 1; orbicular a minute dark spot with whitish annulus; reniform with incomplete whitish annulus and its centre incompletely defined by dark brown, large, its edges sinuous, some whitish above it on

costa, a wedge-shaped deep red-brown patch beyond it; postmedial line whitish incompletely defined on outer side by dark brown, slightly bent outwards below costa, then minutely waved and closely approximated to the reniform, oblique below vein 4; two oblique white streaks defined above by blackish especially towards extremities below postmedial part of costa which is whitish with slight blackish points; an oblique whitish streak from vein 7 below apex to the postmedial line at vein 4; a dark line before termen, arising at vein 7, slight and waved to vein 3, then oblique and ending just above vein 1; a fine waved dark terminal line; cilia whitish at base, red-brown at tips. Hind wing ochreous white tinged with red-brown; a large faint brownish discoidal annulus with traces of two sinuous lines from it to inner margin; an indistinct double sinuous brown postmedial line, angled inwards beyond lower angle of cell and outwards at vein 2; an indistinct minutely waved brown subterminal line with a patch of dark suffusion before it at vein 2; the terminal part of vein 1 defined by a dentate dark mark; a strong blackish line before termen, slightly sinuous to discal fold and ending at submedian fold; a fine dark terminal line; underside of both wings white striated with brown except on inner area of fore wing on which all the markings are obsolete; fore wing with black point in middle of cell, reniform finely defined by black and constricted at middle, postmedial line strong black and incurved to vein 5, then waved, two oblique dentate blackish marks below postmedial part of costa followed by a double waved brown line, apical area creamy white, the medial part of terminal area suffused with red-brown, the dark line before termen as above; hind wing with the terminal area suffused with red-brown to submedian fold, the discoidal bar defined by black at sides, the postmedial line black sinuous incurved below vein 3 and ending at submedian fold, traces of a waved subterminal line and of a series of points and striæ before termen.

Hab. Venezuela, 1 ♂ type; Brazil, at sea 1500 miles north of Rio Janeiro (*W. Browne*), 1 ♀. *Exp.* 52 millim.

7949. Cymosafia laba.

Focilla laba, Druce, Biol. Centr.-Am., Het. i. p. 392, pl. 33. f. 3 (1890).

Head and thorax ochreous whitish suffused with red-brown; palpi with red-brown bands at middle and extremity of 2nd joint and the 3rd joint red-brown; abdomen reddish brown, the ventral surface ochreous suffused with red-brown. Fore wing ochreous suffused with red-brown and with some dark irroration; a curved ochreous subbasal striga from costa defined on inner side by red-brown; antemedial line ochreous defined on outer side by dark brown, waved, angled outwards below costa and inwards at vein 1; three oblique ochreous striæ from medial part of costa and traces of two sinuous brown medial lines; reniform with its centre defined

by blackish and slight whitish annulus; postmedial line whitish towards costa, then blackish and rather interrupted, minutely waved, at vein 3 bent inwards to lower inner edge of reniform, some whitish beyond it on costa; an oblique black streak below postmedial part of costa; an oblique pale streak defined on inner side by brown suffusion from vein 7 below apex to the postmedial line at vein 5; traces of a double minutely waved brown subterminal line with some dark points on it; a series of dark points before termen from costa to discal fold, then dark striæ to the submedian fold; a slight waved dark terminal line with pale points beyond it from apex to discal fold; cilia dark at tips. Hind wing ochreous suffused with red-brown and with some dark irroration; traces of a pale discoidal annulus; an indistinct diffused double sinuous brown medial line; postmedial line blackish,

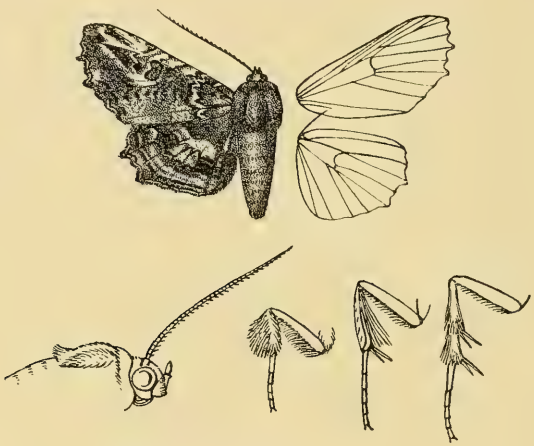


Fig. 48.—*Cymosafia laba*, ♂. ½.

dentate at veins 5 to 2; subterminal line blackish, dentate, with dark marks before it at discal and submedian folds; a strong black line before termen slightly defined on inner side by whitish and ending at submedian fold; a fine waved dark terminal line. Underside ochreous whitish suffused with red-brown especially at middle of terminal area of fore wing and on hind wing and striated with brown; fore wing with black point in middle of cell, reniform finely defined by black and constricted at middle, postmedial line with wedge-shaped black mark from costa, then waved, incurved below vein 4 and obsolete on inner area, an oblique black streak below postmedial part of costa, a double waved subterminal line, the inner line formed of blackish marks the outer red-brown, a black line before termen formed by oblique striæ towards apex then dentate to vein 3; hind wing with the discoidal bar defined at sides by black, the postmedial line black, waved, the subterminal

line red-brown, sinuous, defined on inner side by black below vein 5.

Hab. GUATEMALA, Cerro Zunil (*Champion*), 1 ♂, Volcan de Atitlan (*Champion*), 1 ♀ type, Godman-Salvin Coll. *Exp.* 48 millim.

Genus **RAMPHIA.**

Type.
Ramphia, Guen. Noct. iii. p. 142 (1852) ..... *albizona*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and broadly fringed with scales in front, the 3rd very long and dilated into a knob at extremity; frons smooth, with slight lateral tufts of hair above; eyes large, round; antennæ of male with very short slender branches ending in pairs of bristles, serrated towards extremity, of female with bristles and cilia; thorax clothed with scales and hair mixed and without crests, the patagia broadly dilated with scales at extremity; tibiæ smoothly scaled, the fore and mid tibiæ with slight tufts of scales on outer side near base, the fore tibiæ not spined, the hind tibiæ spined between the mid and hind spurs only; abdomen with dorsal series of large crests. Fore wing with the costa highly arched towards apex which is rounded, the termen evenly curved, crenulate; the cell short; veins 3, 4 from angle: 5 from just above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about one-third length of wing; vein 3 from before angle; 4, 5 from angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

7950. Ramphia albizona.

Noctua albizona, Latr. in Humb. & Bonpl. Rec. ii. p. 136, pl. 43. ff. 5, 6 (1817), ♀; Feld. Reise Nov. pl. 114. f. 5; Druce, Biol. Centr.-Am., Het. i. p. 367.
Ramphia evinga, Guen. Noct. iii. p. 143 (1852), ♂.
Ramphia amarygma, Guen. Noct. iii. p. 144 (1852), ♀.
Brujas basicincta, Wlk xiv. 1251 (1858), ♂.
Syrnia transacta, Wlk. xiv. 1278 (1858), ♀.
Latebraria quadriplaga, Wlk. xiv. 1284 (1858), ♂.

♂. Head, thorax, and abdomen deep red-brown with a few minute white scales; pectus, legs, and ventral surface of abdomen ochreous tinged with red-brown. Fore wing red-brown suffused with dark greyish brown and irrorated with a few minute white scales to the postmedial line; subbasal line black, excurved below costa and ending at submedian fold; antemedial line black, forming a small spot at costa, then sinuous, bent inwards in cell, strong and oblique from median nervure to vein 1; traces of a small orbicular defined by blackish; reniform a small blackish spot defined at sides by pale reddish; an indistinctly treble diffused blackish sinuous medial line strongly incurved below vein 4; postmedial line very indistinct, double, minutely waved, incurved below vein 4; a conical blackish patch on postmedial part of costa with some pale points on costa; subterminal line very indistinct, double, dark, sinuous, bent outwards to apex; a series of slight brown lunules before termen defined on outer side by whitish to discal fold and at submedian fold. Hind wing red-

brown, the basal area suffused with dark brown, the postmedial area irrorated with blackish; an indistinct double sinuous dark medial line; postmedial line indistinct, double, minutely waved; subterminal line indistinct, double, dark filled in with rufous and with some dark suffusion before it on costal area, sinuous; a series of slight brown lunules before termen defined on outer side by whitish points. Underside grey-brown; fore wing with black

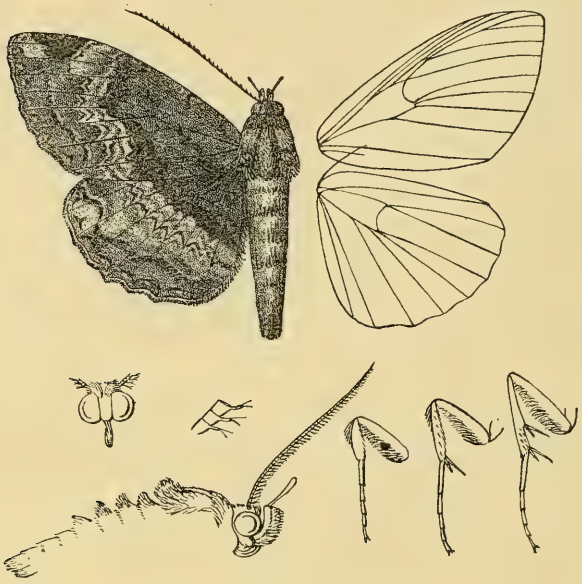


Fig. 49.—*Ramphia albizona*, ♂. ½.

discoidal point and indistinct double sinuous medial, postmedial, and subterminal lines, a series of dark points before termen; hind wing with black discoidal point, double minutely waved medial line, waved dark postmedial line defined on outer side by ochreous, indistinct double subterminal line with dark patches on it at costa, discal and submedian folds, and series of dark points before termen.

♀. Fore wing with broad white band before the postmedial line with some dark irroration on it, no black postmedial patch on costa, an irregular white subapical spot; hind wing with broad white band before the postmedial line with some dark irroration on it and white patch beyond the subterminal line from below costa to vein 6.

Ab. 1. ♂. Wings more uniform dark brown irrorated with white.

Ab. 2. *amarygma* ♀. Wings with the white band reduced to three more or less incomplete series of small white spots.

Ab. 3. *transacta* ♀. Wings with the medial white band and spots absent, the subapical white patch obsolescent on fore wing, absent on hind wing.

Hab. Mexico, Oaxaca (*Sallé*), 1 ♀, Yucatan (*Becker*), 1 ♂ type *basicincta*, Temax (*Gaumer*), 2 ♂; Guatemala, Pantaleon (*Champion*), 1 ♂, R. Naranjo (*Champion*), 1 ♀; Nicaragua, Chontales (*Belt*), 1 ♀; Costa Rica, Sta. Clara Valley (*Zurcher*), 2 ♂; Panama, Chiriqui (*Ribbé*), 1 ♂, 2 ♀, Godman-Salvin Coll., Cana Mines (*Tylecote*), 1 ♀; W. Coast of Centr. Am. (*Kellet & Wood*), 1 ♀ type *transacta*; Trinidad, Caparo (*Kaye*), 3 ♂, 1 ♀; Venezuela, 1 ♀; Brazil, Amazons, Pará (*Bates*), 3 ♀, Theresopolis (*Michaelis*), 1 ♂; Paraguay, Sta. Cruz (*Moor*), 1 ♀. *Exp.* 68–94 millim.

Genus **SAFIDIA**, nov.

Type, *S. azteca*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd long; frons smooth; eyes large, round; antennæ of male laminate and with fasciculate cilia and bristles; thorax clothed almost entirely with scales, the pro- and metathorax with large spreading crests; tibiæ slightly fringed with hair; all the tibiæ spined; abdomen with dorsal series of large crests. Fore wing with the apex rounded, the termen evenly curved and strongly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

7951. **Safidia azteca.**

Hadræcia azteca, Schaus, Trans. Am. Ent. Soc. xxi. p. 231 (1894); Druce, Biol. Centr.-Am. ii. p. 514, pl. 97. ff. 2, 3.

♂. Head and thorax red-brown mixed with some whitish; palpi dark brown towards base; legs irrorated with dark brown, the tarsi black-brown with pale rings; abdomen whitish suffused with red-brown, the crests darker. Fore wing red-brown irrorated and in parts suffused with dark brown, the medial area white irrorated with brown except on costal area; subbasal line blackish defined on inner side by white suffusion, sinuous, from costa to vein 1, the terminal area tinged with purple; antemedial line very indistinct, double, dark filled in with white, angled outwards below costa and oblique below vein 1; faint traces of two sinuous brown medial lines; orbicular a minute white spot incompletely defined by black; reniform an oblique white bar with some brown on it below and defined at sides by blackish, connected with the costa by a white bar with dark striga on it; postmedial line very indistinct, double, dark filled in with whitish, arising below costa, excurved below vein 7, angled outwards at veins 4, 3, then bent inwards to below end of cell and erect and sinuous to inner margin, a diffused black line defined on outer side by some blue-green scales beyond it and some minute white points on costa; subterminal line dark brown slightly defined on inner side by blue-green scales and some white

at costa, oblique towards costa, excurved below vein 7 and at middle, then oblique and waved; a series of black-brown lunules before termen; a fine whitish line at base of cilia. Hind wing pale red-brown, the costal area whitish to beyond middle, the terminal area darker; traces of a dark subterminal line, more distinct at tornus; a series of dark lunules before termen; cilia

Fig. 50.—*Safidia azteca*, ♂. ½.

with a whitish line at base; the underside white tinged with red-brown and irrorated with dark brown, a discoidal lunule defined at sides by dark brown, postmedial line dark brown, slightly angled outwards at discal fold and ending at submedian fold, a dark subterminal shade and series of small spots before termen.

Ab. 1. Fore wing without white on medial area, the antemedial line dark defined on each side by white, the postmedial line defined on each side by white at costa and on outer side on inner area, the subterminal line with more green before it.

♀. Fore wing with the white on medial area replaced by pale brown, the terminal area pale brown, the area before the subterminal line mostly green.

Ab. 2. Similar to ab. 1, but fore wing tinged with purple and suffused with green scales, the area before the subterminal line pale purple tinged with white and with bright green scales beyond the diffused black line and before the subterminal line.

Ab. 3. Similar but fore wing with the ante- and postmedial lines defined by yellowish white.

Hab. Mexico, Jalapa (*Trujillo*), 2 ♂, 2 ♀; Costa Rica, Candelaria Mts. (*Underwood*), 1 ♀, Godman-Salvin Coll. *Exp.* 54–64 millim.

Genus **SAFIA**.

	Type.
Safia, Guen. Noct. iii. p. 20 (1852)	*celia.*
Campometra, Guen. Noct, iii. p. 25 (1852)	*amella.*
Rhubina, Wlk. xv. 1820 (1858)	*irresoluta.*
Placonia, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 410 (1880)	*selene.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd long; frons smooth, with tuft of hair above; eyes large, round; antennæ of male with fasciculate cilia; thorax clothed almost entirely with scales, the pro- and metathorax with spreading crests, the patagia dilated with scales at extremity; fore coxæ and femora of male fringed with long hair, the fore and mid tibiæ moderately fringed with hair, the mid tibiæ dilated with a groove containing a tuft of long hair, the hind tibiæ fringed with long hair, the fore and hind tibiæ not spined; abdomen with dorsal series of crests, the crests on medial segments large, formed of loose hair, the crest on 3rd segment somewhat divided. Fore wing with the costa arched towards apex which is rounded, the termen evenly curved and highly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Hind wing of male on underside clothed with silky androconia.

A. Hind tarsi of male fringed with hair above.
- *a*. Hind wing with the discal area tinged with crimson ... *rufipicta.*
- *b*. Hind wing with the discal area not tinged with crimson.
  - a^1. Fore wing with the basal area suffused with blackish.
    - a^2. Fore wing with the outer edge of reniform not connected with the costa by a whitish bar.
      - a^3. Fore wing without black patch on inner medial area.
        - a^4. Fore wing with the postmedial area not suffused with black.
          - a^5. Fore wing with the basal area tinged with blue-grey ..... *pascuala.*
          - b^5. Fore wing with the basal area not tinged with blue-grey ..... *obsolefacta.*
        - b^4. Fore wing with the postmedial area suffused with black ..... *simplicior.*
      - b^3. Fore wing with black patch on inner medial area ..... *endomelas.*
    - b^2. Fore wing with the outer edge of reniform connected with the costa by a whitish bar ..... *demera.*
  - b^1. Fore wing with the basal area concolorous.
    - a^2. Both wings with the terminal area concolorous... *subrosea.*
    - b^2. Fore wing with the terminal area pale ..... *guayaquilata.*
    - c^2. Both wings with the terminal area whitish..... *separabilis.*

7952. Safia rufipicta. (Plate CCXXV. fig. 10.)

Campometra rufipicta, Schaus, A. M. N. H. (8) vii. p. 53 (1911).

♂. Head and thorax dark brown mixed with some greyish; antennæ blackish; palpi and legs blackish, the tarsi ringed with white. Fore wing red-brown mixed with some greyish, the basal half suffused with black; subbasal line black slightly defined on outer side by whitish, waved, from costa to submedian fold; antemedial line double, black, filled in with white towards costa, waved; traces of a double waved dark medial line; reniform faintly defined by blackish and by white points, a slight dark spot in centre; postmedial line indistinctly double, blackish, filled in with whitish towards costa, at vein 3 retracted to lower angle of cell, then somewhat oblique, a blackish mark defined on inner side by whitish before it on costa; subterminal line very indistinct, pale, waved, faintly defined on inner side by brown, some dark suffusion before it on costal area and a dentate mark below vein 4; a series of black striæ before termen; a slight waved dark terminal line and fine pale line at base of cilia. Hind wing dark brown mixed with some grey and tinged with crimson to the postmedial line except on costal area, the inner margin grey; two indistinct waved dark medial lines; postmedial line blackish, minutely waved; subterminal line blackish, rather diffused and slightly waved; a series of blackish striæ slightly defined on inner side by whitish before termen; a slight waved dark terminal line, and fine pale line at base of cilia; the underside clothed with leaden fuscous scales.

Hab. Costa Rica, Sixola R. (*Schaus*), 1 ♂; Panama, Obispo (*Salvin*), 1 ♂. *Exp.* 44 millim.

7953. Safia pascuala. (Plate CCXXV. fig. 11.)

Placonia pascualx, Schaus, A. M. N. H. (7) viii. p. 45 (1901).

♂. Head and thorax red-brown, the thorax darker and slightly mixed with grey; pectus grey tinged with red-brown; tarsi blackish ringed with white; abdomen reddish brown, the crests darker. Fore wing greyish suffused with red-brown, the basal area blackish with a blue-grey gloss; subbasal line black defined on outer side by some white scales, curved, from costa to vein 1; antemedial line black, inwardly oblique and minutely waved; two indistinct oblique sinuous brown medial lines; a minute dark spot in middle of cell; reniform with faint whitish annulus slightly defined by brown; postmedial line blackish, oblique to below vein 7, then waved, incurved between veins 4 and 3, then indistinct, at vein 2 retracted to lower angle of cell and indistinctly double and waved to inner margin, a dark brown patch beyond it on costal area with some white points on costa and two faint waved blue-white lines from costa; subterminal line indistinct, dark, oblique from below vein 7 to discal fold, angled outwards below vein 4,

then incurved and waved; a series of strong black striæ before termen and a fine waved blackish line just before termen. Hind wing red-brown irrorated with dark brown; postmedial line slight, dark, dentate, angled inwards between veins 4 and 3 to near lower angle of cell and obsolete in submedian interspace and on inner area; subterminal line blackish, arising at vein 6, angled outwards in discal fold, then sinuous; a line formed of black striæ before termen and a fine waved blackish line just before termen; the underside fuscous grey with indistinct curved postmedial line.

Hab. Mexico, Orizaba (*Schaus*), type † in U.S. Nat. Mus.; Brazil, Amazons (*Pearce*), 1 ♂. *Exp.* 42 millim.

7954. Safia obsolefacta. (Plate CCXXV. fig. 12 ♂, 13 ♀.)

Campometra obsolefacta, Schaus, A. M. N. H. (8) x. p. 512 (1912).

♂. Head, thorax, and abdomen dark brown mixed with grey, the last with the crests blackish; antennæ blackish; palpi blackish; tarsi black ringed with white, the fringe of hair on hind tibiæ and tarsi leaden grey. Fore wing grey suffused with reddish brown and irrorated with dark brown, the basal area suffused with blackish; a faint sinuous blackish subbasal line from costa to submedian fold; antemedial line blackish, sinuous, somewhat inwardly oblique; traces of two waved medial lines; a minute blackish spot in middle of cell; reniform hardly traceable, with faint oblique dark bar on its outer edge above; postmedial line blackish, rather diffused and faintly defined on outer side by whitish towards costa, waved, oblique to below vein 7, at vein 3 retracted to lower angle of cell, then erect and somewhat dentate; subterminal line very indistinct, pale, oblique, waved, with diffused blackish spots before it above and below vein 7 and a dentate mark below vein 4; a series of black striæ before termen; a slight waved dark terminal line and fine pale line at base of cilia. Hind wing brown mixed with greyish and with slight dark irroration; postmedial line indistinct, blackish, waved; subterminal line indistinct, blackish, slightly angled outwards at discal fold, then somewhat sinuous; a series of black striæ before termen; a slight waved blackish terminal line and fine pale line at base of cilia; the underside clothed with leaden fuscous scales.

♀. Much darker; fore wing with the basal, postmedial, and terminal areas largely suffused with dark leaden blue-grey and irrorated with some white scales.

Hab. Costa Rica, Sixola R. (*Schaus*), 1 ♂. *Exp.* 42 millim.

7955. Safia simplicior. (Plate CCXXV. fig. 14.)

Homoptera simplicior, Wlk. xiii. 1065 (1857); Druce, Biol. Centr.-Am., Het. i. p. 344.

♂. Head and thorax red-brown mixed with some darker brown; antennæ blackish; palpi, pectus, and legs dark brown mixed with grey, the tarsi ringed with white; abdomen grey-brown the crests

blackish. Fore wing greyish suffused with red-brown and irrorated with dark brown, the basal area suffused with black; subbasal line blackish, curved, from costa to submedian fold; antemedial line black, minutely waved, somewhat inwardly oblique; traces of a double medial line; reniform faintly defined by diffused dark brown; a dark brown patch on costa before the postmedial line, which is blackish, minutely waved, at vein 3 retracted to lower angle of cell, then excurved; the area before the subterminal line suffused with black and with two whitish points on costa; subterminal line defining the outer edge of the black area, angled outwards below veins 7 and 4, then incurved and slightly angled outwards below vein 3; a series of black striæ before termen connected by streaks with the termen; a fine pale line at base of cilia. Hind wing red-brown with slight dark irroration; subterminal line black and with a band of black suffusion before it, arising at vein 6, angled outwards at discal fold and slightly at vein 5, then incurved and excurved below vein 2; a series of black striæ before termen; a slight waved dark terminal line and pale line at base of cilia; the underside clothed with leaden fuscous scales.

♀. Fore wing with the black area before the subterminal line running inwards below vein 3 to lower angle of cell; underside of hind wing grey suffused with brown; traces of diffused medial and postmedial lines from costa to lower angle of cell and vein 4 and a diffused subterminal shade.

Hab. Honduras (*Dyson*), 1 ♂ type; Trinidad, Caparo, 1 ♀. *Exp.* 46 millim.

7956. **Safia endomelas**, n. sp. (Plate CCXXV. fig. 15.)

Homoptera simplicior, Druce, Biol. Centr.-Am., Het. i. p. 344 (part.) nec Wlk.

♂. Head, thorax, and abdomen red-brown mixed with some blackish and grey; palpi, pectus, and legs black-brown, the tarsi ringed with white. Fore wing greyish suffused with red-brown and irrorated with dark brown, the base suffused with black; a sinuous blackish subbasal line from costa to submedian fold; antemedial line black, expanding into a small spot at costa, waved, somewhat inwardly oblique; a rather diffused double sinuous blackish medial line with a black patch from submedian fold to inner margin extending from the inner line to near the postmedial line; reniform faintly defined by blackish, and with some blackish suffusion beyond it; a blackish patch on costa before the blackish postmedial line, which is waved to vein 3, then retracted to lower angle of cell, then dentate to below vein 2 and sinuous to inner margin, some pale points beyond it on costa; subterminal line slight, black, oblique, waved, with black suffusion before it from costa to discal fold; a series of small dentate black spots before termen; a slight waved dark terminal line and fine pale line at base of cilia. Hind wing red-brown irrorated with dark brown; traces of a double sinuous dark medial line; postmedial line slight,

black, minutely waved; subterminal line black, obsolescent towards costa, angled outwards at discal fold, then sinuous; a series of slight dentate dark marks before termen; a slight waved dark terminal line; the underside clothed with leaden fuscous scales.

Hab. Mexico Jalisco (*Schumann*), 1 ♂ type, Godman-Salvin Coll. *Exp.* 52 millim.

7957. Safia demera. (Plate CCXXV. fig. 16.)

Placonia demera, Schaus, A. M. N. H. (7) viii. p. 45 (1901).

♂. Head and thorax red-brown mixed with dark brown; palpi blackish; pectus and legs dark brown, the tarsi ringed with white; abdomen dark brown, the crests with some red-brown, the second segment with whitish dorsal band. Fore wing whitish suffused and irrorated with red-brown, the basal area suffused with black-brown; a faint sinuous blackish subbasal line from costa to submedian fold; antemedial line black faintly defined on inner side by whitish, waved, inwardly oblique below submedian fold; medial line double, blackish, rather diffused, excurved at median nervure, then incurved, a black spot on the inner line in the cell; reniform defined at sides by whitish bars, its outer edge connected by a whitish bar with the costa, some blackish beyond it and beyond the whitish bar on costal area; postmedial line slight, blackish, faintly defined on outer side by whitish towards costa, waved, at vein 4 retracted to lower angle of cell, then erect and slightly defined on outer side by whitish; subterminal line blackish with blackish suffusion before it from costa to discal fold, oblique from below vein 7 to discal fold, forming a dentate mark below vein 4, oblique to vein 2 and slightly angled outwards below vein 3, then somewhat oblique and diffused on inner side to inner margin near tornus; a series of black striæ before termen connected by streaks with the termen. Hind wing red-brown; faint traces of a double medial line; postmedial line slight, blackish, minutely dentate; subterminal line blackish faintly defined on outer side by grey, slightly sinuous, some grey suffusion beyond it at middle; a series of black striæ before termen faintly defined on inner side by whitish; a waved blackish terminal line; the underside clothed with leaden fuscous scales and with traces of curved medial and postmedial lines.

Hab. Panama; Trinidad, Caparo, 1 ♂. *Exp.* 46 millim.

7958. Safia subrosea.

Homoptera subrosca, Wlk. xiii. 1070 (1857); Druce, Biol. Centr.-Am., Het. i. p. 345.

♂. Head and thorax red-brown mixed with greyish; palpi, pectus, and legs dark brown, the tarsi ringed with white; abdomen dark brown with a paler dorsal band on 2nd segment. Fore wing grey suffused and irrorated with red-brown; subbasal line slight, curved, minutely waved, from costa to vein 1, a small blackish spot above inner margin; a triangular dark brown shade on inner medial

area extending on inner margin to just before the antemedial line, which is slight, blackish, minutely dentate to median nervure, below which it is excurved, incurved at vein 1 and angled outwards above inner margin; two indistinct sinuous dark medial lines; reniform defined by whitish except below; an obliquely curved black-brown fascia from costa at the subterminal line to outer edge of reniform, defined above by whitish; postmedial line slight, blackish, waved, obsolescent on costal area, at vein 3 retracted to lower angle of cell, then erect; some small whitish spots on postmedial part of costa; subterminal line black-brown, slightly angled outwards below vein 7, then oblique to discal fold, angled outwards below vein 4, then

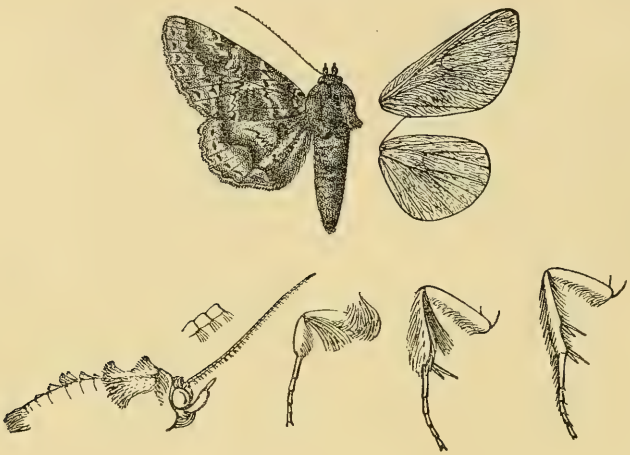


Fig. 51.—*Safia subrosea*, ♂. ½.

incurved and with a black-brown band on its inner side below vein 2; a series of black striæ before termen; a fine waved dark terminal line. Hind wing red-brown slightly mixed with greyish, the terminal area grey mixed with red-brown; traces of a double sinuous dark medial line; postmedial line slight, dark, minutely waved; subterminal line black, obsolescent on costal area, angled outwards at discal fold and excurved at submedian fold; a series of black striæ before termen and a fine waved dark terminal line. Underside of both wings uniform fuscous brown.

♀. Fore wing without the triangular black-brown shade on inner medial area, the dark band on inner area separated from the subterminal line, the black striæ before termen defined on inner side by whitish; hind wing less strongly suffused with brown, the medial and postmedial lines more indistinct; the underside irrorated with grey, a dark discoidal lunule with pale centre placed on a diffused medial line, a diffused postmedial line, and subterminal shade.

Hab. Panama, Chiriqui (*Ribbé*), 1 ♀, Godman-Salvin Coll., La Chorrera (*Dolby-Tyler*), 1 ♀; Trinidad, Caparo, (*Kaye*), 1 ♂, 2 ♀; Colombia, Minca (*H. H. Smith*), 1 ♂, 1 ♀; Hab. ign., 1 ♀ type. *Exp.* 46–52 millim.

*7959. Safia guayaquilata. (Plate CCXXV. fig. 17.)

Safia guayaquilata, Dogn. Het. Nouv. Am. Sud, vi. p. 19 (1912).

♂. Head, thorax, and abdomen reddish brown mixed with dark brown and some grey; tarsi black-brown ringed with whitish. Fore wing grey-brown suffused with dark brown to the subterminal line, the terminal area pale grey-brown; double subbasal blackish striæ from costa and cell; antemedial line blackish, waved, double at costa; a sinuous blackish medial line; a blackish discoidal striga; a blackish postmedial patch defined by grey on costa, the indistinct dentate blackish postmedial line arising from it, incurved below vein 4; some white points on postmedial part of costa; subterminal line black, rather diffused on inner side towards costa, slightly angled outwards below vein 7, then strongly incurved and somewhat sinuous, ending at tornus; a series of black striæ before termen; a fine pale line at base of cilia. Hind wing dark brown slightly irrorated with greyish to the subterminal line, the terminal area pale grey-brown; an indistinct waved blackish postmedial line; subterminal line black, angled outwards at discal fold, then incurved, excurved below vein 2, and ending at tornus, a rounded white patch beyond it between veins 4 and 2; a series of blackish striæ before termen; the underside uniformly clothed with silky grey-brown scales.

Hab. Brazil, Guayaquil, type † ♂ in Coll. Dognin. *Exp.* 48 millim.

*7960. Safia separabilis. (Plate CCXXV. fig. 18.)

Homoptera separabilis, Wlk. xv. 1799 (1858).

♀. Head and thorax ochreous white mixed with reddish brown; antennæ, palpi, and sides of frons dark brown; tarsi brown with pale rings; abdomen ochreous white suffused with reddish brown, the base and ventral surface paler. Fore wing ochreous white suffused with red-brown, the terminal area paler; subbasal line indistinct, brown, minutely waved, from costa to inner margin, with two whitish points at costa; antemedial line indistinctly double, brown, minutely waved; a double waved brown medial line with a diffused chocolate-brown patch before and beyond it from cell to inner margin; reniform indistinct, pale, defined on outer side by an oblique white bar extending to costa and with some black-brown beyond it beyond the cell; an obliquely curved and slightly waved pale band from lower angle of cell to inner margin, defined on outer side by the slight dark postmedial line, which is somewhat dentate from costa to vein 3, then bent inwards to the pale band, some pale points beyond it on costa; subterminal line pale, defined

on inner side by black-brown suffusion from costa to discal fold and from vein 2 to inner margin and by a small black spot below vein 4, angled outwards below veins 7 and 4, incurved at discal fold and strongly below vein 3, a diffused waved red-brown shade beyond it; a series of minute black lunules connected by short streaks with the fine waved dark line just before termen; cilia red-brown mixed with whitish. Hind wing ochreous white suffused with red-brown except on terminal area and at inner margin; a double oblique slightly sinuous dark brown medial line; an indistinct minutely waved dark postmedial line; subterminal line blackish, slightly waved, somewhat angled outwards at discal fold, and ending at tornus; the terminal area slightly tinged in parts with red-brown; a fine interrupted minutely dentate blackish line before termen; a fine waved dark line just before termen; cilia red-brown mixed with whitish. Underside of both wings ochreous white suffused with red-brown except at termen; fore wing with some dark marks on costa and series of lunules before termen; hind wing with discoidal lunule filled in with whitish, diffused sinuous medial and postmedial lines, diffused subterminal shade, and series of dark lunules before termen.

Hab. Brazil, Rio Janeiro, type † ♀ in Mus. Oxon. *Exp.* 50 millim.

B. Hind tarsi of male not fringed with hair above.
  a. Fore wing with the antemedial line strongly waved throughout ..... *phæochroa.*
  b. Fore wing with the antemedial line minutely waved, oblique below the cell.
    a^1. Hind wing with the subterminal line black ..... *cænochroa.*
    b^1. Hind wing with the subterminal line red-brown ..... *brunca.*

7961. **Safia phæochroa,** n. sp. (Plate CCXXV. fig. 19.)

♂. Head and thorax black-brown with a slight reddish tinge; palpi, pectus, and legs black-brown, the tarsi ringed with white; abdomen black-brown with a greyish tinge. Fore wing red-brown almost wholly suffused with black-brown; subbasal line black faintly defined on outer side by reddish, sinuous, from costa to submedian fold; antemedial line black faintly defined on each side by reddish, waved; a double waved black medial line; reniform reddish faintly defined by black and its centre defined by blackish, a reddish spot above it on costa; postmedial line black, waved, at vein 3 retracted to lower angle of cell, then somewhat oblique; subterminal line blackish, sinuous, angled outwards below vein 7 where there is a black mark on its inner side, incurved below vein 3 and ending at tornus; a series of blackish striæ before termen. Hind wing red-brown almost wholly suffused with black-brown; traces of a double sinuous dark medial line; postmedial line indistinct, black, excurved between veins 5 and 3, then rather oblique and with small black spots on it; subterminal line black,

obsolescent towards costa, then sinuous; a series of black striæ before termen; the underside clothed with leaden fuscous scales.

Hab. Brazil, Amazons, Pará (*Trumbill*), 1 ♂ type. *Exp.* 44 millim.

7962. **Safia cœnochroa**, n. sp. (Plate CCXXVII. fig. 1.)

Head and thorax red-brown mixed with dark brown and some grey; antennæ blackish; palpi, pectus, and legs grey-brown, the tarsi ringed with whitish; abdomen red-brown tinged with grey, the crests blackish, the ventral surface paler. Fore wing greyish suffused with red-brown and irrorated with dark brown, the antemedial and medial areas with diffused dark bands; a waved blackish subbasal line from costa to submedian fold; antemedial line double, blackish, minutely dentate to median nervure, then inwardly oblique; an indistinct double sinuous dark medial line; reniform with faint whitish annulus slightly defined by blackish, a whitish bar above it from costa and blackish spot on its outer edge; a blackish patch on costa before the postmedial line, which is indistinctly double, blackish, somewhat dentate, at vein 3 retracted to lower angle of cell, then erect, some whitish points beyond it on costa; subterminal line blackish, defined on inner side by dark suffusion from costa to discal fold, oblique, slightly angled outwards below veins 8, 7, 4, then sinuous and with diffused blackish spot on its inner side below vein 2; a series of small black spots before termen, and a slight waved dark terminal line. Hind wing red-brown with slight dark irroration; postmedial line indistinct, brown, somewhat sinuous; subterminal line brown, slightly waved, excurved below vein 2; a series of blackish striæ before termen and a fine waved dark terminal line; the underside clothed with leaden grey scales, a faint dark discoidal lunule and curved postmedial line.

Hab. Br. Guiana, Berbice (*Aiken*), 1 ♂ type, Rockstone (*Kaye*), 1 ♀. *Exp.* 44 millim.

7963. **Safia brunca.**

Yrias brunca, Schaus, A. M. N. H. (7) viii. p. 51 (1901).

♂. Head, thorax, and abdomen red-brown, the last with the dorsal crests blackish; antennæ blackish; palpi, pectus, and legs dark greyish brown, the tarsi ringed with whitish; ventral surface of abdomen brownish white. Fore wing red-brown with a greyish tinge and slight red irroration; subbasal line slight, blackish, minutely waved, from costa to submedian fold; antemedial line blackish towards costa, then almost obsolete, inwardly oblique; an indistinct double sinuous brown medial line; reniform brownish white faintly defined by brown; a dark patch on costa before the slight brown postmedial line which is waved, at vein 3 retracted to

lower angle of cell, then erect, some whitish points alternating with blackish streaks beyond it on costa; subterminal line indistinct, double, brown, oblique, slightly excurved below veins 7 and 4; a series of black striæ before termen; a waved black terminal line and fine pale line at base of cilia. Hind wing red-brown with a slight greyish tinge and some red irroration; faint traces of two

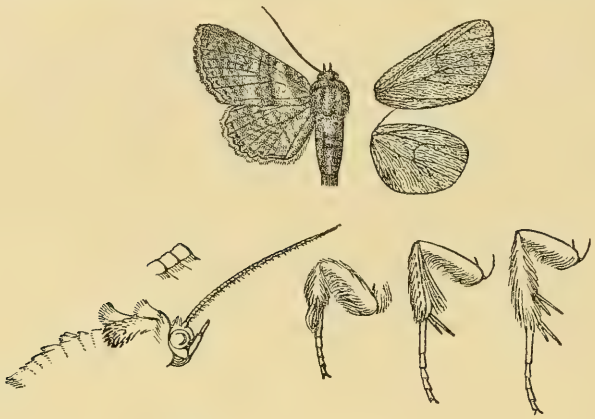


Fig. 52.—*Safia brunca*, ♂. ½.

sinuous medial lines; postmedial line slight, brown faintly defined on outer side by grey, sinuous; an indistinct double slightly waved red-brown subterminal line; a series of brown striæ before termen, and a waved brown terminal line; the underside clothed with leaden fuscous scales and with traces of diffused antemedial, postmedial, and subterminal lines.

♀. Fore wing with pale annulus to the reniform, its inner edge with whitish bar, its outer edge with two white points at lower extremity, some fuscous suffusion beyond the postmedial line and at middle of terminal area; underside of hind wing brown with some pale irroration, two indistinct diffused medial lines, a postmedial line, a subterminal shade, and series of dark striæ before termen.

Hab. Br. Guiana, Demerara; Fr. Guiana, St. Laurent Maroni (*Schaus*), 1 ♂; Brazil, Amazons (*Pearce*), 1 ♀. *Exp.* ♂ 36, ♀ 44 millim.

Sect. II. Hind wing of male on underside not clothed with silky androconia.

A. Fore wing with the postmedial line retracted to lower angle of cell.

a. Hind wing with small terminal black spot with white point on its inner side below vein 7.

a^1. Palpi with fine white streaks in front.

a^2. Fore wing with the lines not defined by white at costa.

a^3. Hind wing with small round black spots before termen between veins 5 and 2 ..... *sublimis*.

b^3. Hind wing with small black lunules before termen between veins 6 and 2 ..... *pacifica.*
b^2. Fore wing with the lines defined by white at costa ..... *metopis.*
b^1. Palpi without fine white streaks in front ..... *amazonica.*
b. Hind wing without small terminal black spot below vein 7.
a^1. Palpi with fine white streaks at sides ..... *olearos.*
b^1. Palpi without fine white streaks at sides.
a^2. Fore wing with the antemedial line not waved below the cell.
a^3. Fore wing with the antemedial line angled outwards at median nervure, then oblique.
a^4. Fore wing with the whole medial area suffused with white ..... *meretricia.*
b^4. Fore wing with the medial area not suffused with white ..... *leucopis.*
b^3. Fore wing with the antemedial line oblique throughout, not angled outwards at median nervure.
a^4. Hind wing not red-brown.
a^5. Hind wing without crimson tinge on disk, the subterminal line not waved at middle.
a^6. Hind wing without black patch beyond the subterminal line below vein 6 ..... *aperta.*
b^6. Hind wing with black patch beyond the subterminal line below vein 6 ..... *permixta.*
b^5. Hind wing with slight crimson tinge on disk, the subterminal line minutely waved at middle ..... *celia.*
b^4 Hind wing red-brown..... *bruma.*
c^3. Fore wing with the antemedial line excurved throughout ..... *caminata.*
b^2. Fore wing with the antemedial line waved below the cell.
a^3. Fore wing with white orbicular stigma ..... *leucoplaga.*
b^3. Fore wing without white orbicular stigma.
a^4. Fore wing with the ground-colour greenish grey ..... *amata.*
b^4. Fore wing with the ground-colour pale grey.
a^5. Fore wing with the subterminal line angled outwards below veins 7 and 4, but not waved ..... *amella.*
b^5. Fore wing with the subterminal line waved. *mollis.*
c^4. Fore wing brown.
a^5. Hind wing without black spot on subterminal line above tornus.
a^6. Fore wing with the outer edge of reniform not connected with the costa by a whitish bar.
a^7. Fore wing with the subterminal line not strongly incurved below vein 4.
a^8. Fore wing with the dark postmedial patch on costa not broadly defined by pale suffusion.
a^9. Fore wing with the basal area suffused with blackish.
a^{10}. Fore wing with the basal area and hind wing with leaden blue gloss ..... *chalybeata.*
b^{10}. Fore wing with the basal area and hind wing without leaden blue gloss ..... *minta.*

b^9. Fore wing with the basal area not suffused with blackish.
a^{10}. Fore wing with the subterminal line angled outwards below vein 4.
a^{11}. Wings not irrorated with red scales.
a^{12}. Wings not suffused with fuscous black ..... *obscura.*
b^{12}. Wings largely suffused with fuscous black ..... *albidiscata.*
b^{11}. Wings irrorated with red scales ..... *decessa.*
b^{10}. Fore wing with the subterminal line not angled outwards below vein 4 ..... *acharia.*
b^8. Fore wing with the dark post-medial patch on costa broadly defined by pale suffusion.
a^9. Hind wing with the subterminal line minutely waved between discal and submedian folds ..... *abscisa.*
b^9. Hind wing with the subterminal line not waved between discal and submedian folds ..... *barata.*
b^7. Fore wing with the subterminal line strongly incurved below vein 4.
a^8. Fore wing with the basal area concolorous.
a^9. Hind wing with the subterminal line angled outwards at discal fold.
a^{10}. Fore wing strongly suffused with blue-grey ..... *cæruleotincta.*
b^{10}. Fore wing not suffused with blue-grey ..... *guapila.*
b^9. Hind wing with the subterminal line not angled inwards at discal fold ..... *thermochroa.*
b^8. Fore wing with the basal area suffused with black ..... *mascara.*
b^6. Fore wing with the outer edge of the reniform connected with the costa by a whitish bar.
a^7. Hind wing suffused with black-brown to the subterminal line, the terminal area pale.
a^8. Fore wing grey-brown, the subterminal line moderately angled outwards below vein 4; hind wing with white patch at middle of terminal area..... *diodonta.*
b^8. Fore wing red-brown, the subterminal line strongly angled outwards below vein 4; hind wing without white patch at middle of terminal area..... *bidens.*

b^7. Hind wing uniform brown.
a^8. Hind wing with distinct postmedial and subterminal lines and series of spots before termen ..... *subvaria.*
b^8. Hind wing with the postmedial and subterminal lines almost obsolete and without series of spots before termen ..... *nigrescens.*
b^5. Hind wing with black spot on subterminal line above tornus ..... *irresoluta.*
B. Fore wing with the postmedial line not retracted to lower angle of cell.
a. Fore wing with the basal area and costal area to the subterminal line white ..... *meroleuca.*
b. Fore wing with the basal area and costal area to the subterminal line not white.
a^1. Fore wing with the basal area suffused with black... *picturata.*
b^1. Fore wing with the basal area concolorous.
a^2. Fore wing with series of black striæ before termen defined on inner side by whitish.
a^3. Fore wing with the reniform very large and angled inwards on median nervure to below orbicular ..... *divaricata.*
b^3. Fore wing with the reniform not angled inwards on median nervure.
a^4. Fore wing with the postmedial line defined on each side by white at inner margin, the subterminal line whitish ..... *eminens.*
b^4. Fore wing with the postmedial line not defined on each side by white at inner margin, the subterminal line black.
a^5. Wings with narrow whitish band beyond the subterminal line ..... *cades.*
b^5. Wings without whitish band beyond the subterminal line ..... *nyctichroa.*
b^2. Fore wing with series of white points on termen defined on inner side by black points.
a^3. Hind wing with traces of a double medial line, the postmedial line with white points on it ... *noctar.*
b^3. Hind wing without medial line, the postmedial line without white points on it ..... *minax.*

7964. **Safia sublimis.** (Plate CCXXVII. fig. 2.)

Cœnipeta sublimis, Schaus, A. M. N. H. (8) viii. p. 212 (1911).

Head and thorax dark red-brown slightly mixed with grey; palpi with fine white streaks in front; frons with lateral white lines; pectus and legs dark brown mixed with grey, the tarsi blackish ringed with white; abdomen black-brown. Fore wing red-brown mostly suffused with black-brown and irrorated with some blue-white scales; subbasal line faint, blackish, sinuous, from costa to submedian fold; antemedial line indistinctly double, blackish, sinuous, excurved below the cell and with a blue-white striga on it below submedian fold; an indistinct double oblique blackish medial line, angled outwards at median nervure and vein 1; reniform large, with whitish annulus, its centre defined by dark brown, produced at lower extremity, an ochreous bar above it from costa, and a black-

brown patch beyond it; postmedial line black defined on outer side by pale red-brown, oblique to below vein 7, dentate at vein 3, then retracted to lower angle of cell, then oblique and angled outwards at vein 1, some whitish points beyond it on costa; subterminal line double, blackish filled in with pale red-brown, slightly waved to vein 6, then incurved; a series of black striæ before termen; a sinuous blackish terminal line and fine pale line at base of cilia. Hind wing dark reddish brown; an indistinct sinuous dark postmedial line defined on outer side by pale brown, a minute white striga on it at vein 1 defined on each side by blackish; subterminal line blackish, obsolescent towards costa, slightly angled outwards at discal fold, then defined on outer side by pale brown and ending on termen at vein 1; a terminal black spot below vein 7 with white point on its inner side and minute white streak below it; the terminal area cupreous reddish between veins 5 and 2 with round black spots in the interspaces and black streaks on the veins, veins 5 and 2 with minute white streaks; a sinuous blackish terminal line and fine pale line at base of cilia; the underside greyish brown, the costal area irrorated with grey to beyond middle, a discoidal lunule with dark outline, double medial line excurved beyond the cell, waved postmedial line defined on outer side by whitish, subterminal shade slightly defined on outer side by whitish, terminal black spot with white point in centre below vein 7, and dark striæ before termen below veins 4 and 3, the lower defined on inner side by white.

Hab. Costa Rica, Juan Vinas (*Schaus*), 1 ♂, 1 ♀. *Exp.* 58 millim.

7965. Safia pacifica. (Plate CCXXVII. fig. 3.)

Homoptera pacifica, Wlk. xiii. 1065 (1857).
Cœnipeta laurena, Schaus, Pr. U.S. Nat. Mus. xxx. p. 117 (1906).

Head and thorax dark reddish brown, the tips of tegulæ with some white scales; palpi black-brown with two white streaks in front; sides of frons with white lines; pectus and legs brown mixed with grey, the tarsi blackish ringed with white; abdomen fuscous brown, the ventral surface brownish white. Fore wing dark red-brown with a faint purplish gloss and irrorated in parts with some blue-white scales; subbasal line slight, pale, sinuous, from costa to submedian fold; antemedial line dark brown, oblique, waved, defined on each side by pale brown towards costa and with some pure white on its outer edge in submedian interspace; an oblique blackish medial line defined on outer side by pale brown, angled outwards at median nervure and vein 1; reniform with whitish annulus except below, its centre defined by dark brown, its outer edge oblique and connected with the costa by a whitish bar; postmedial line blackish defined on outer side by pale brown, waved, oblique to below vein 7, at vein 3 retracted to lower angle of cell, then oblique and angled outwards at vein 1, the costa beyond it blackish with some white points; a wedge-shaped dark brown patch on costal area before the subterminal line, which is double, black-

brown filled in with pale red-brown, somewhat dentate, angled outwards below vein 7, then oblique; a series of small black lunules before termen with a minute white spot before the lunule at discal fold; a sinuous dark terminal line and fine pale line at base of cilia. Hind wing red-brown suffused with darker brown; traces of two diffused sinuous dark medial lines; a sinuous dark postmedial line; subterminal line dark, diffused on inner side, very slightly angled outwards at discal fold, and with another rather diffused dark line beyond it; a small blackish spot on termen below vein 7 with white points on its inner side and below, followed by a series of small black lunules before termen; a sinuous blackish terminal line and fine pale line at base of cilia; the underside greyish thickly irrorated with brown, the terminal area suffused with brown, a dark discoidal lunule with pale centre, sinuous medial line excurved beyond the cell, and waved postmedial line, a small blackish spot on termen below vein 7 with white spot on its inner side, a series of dark striæ faintly defined by whitish before termen, and some white at middle of termen.

Hab. W. Coast of Centr. America (*Kellet & Wood*), 1 ♀ type; Venezuela, 2 ♀; Br. Guiana (*Roberts*), 1 ♀; Fr. Guiana, St. Laurent Maroni, type † *laurena* in U.S. Nat. Mus.; Brazil, Amazons, Pará (*Goeldi*), 1 ♂. *Exp.* 48–56 millim.

7966. **Safia metopis**, n. sp. (Plate CCXXVII. fig. 4.)

♀. Head, thorax, and abdomen reddish brown mixed with grey-white; the vertex of head defined by a triangular white line; tegulæ tipped with white; palpi black, the 1st joint white at base and extremity, the 2nd and 3rd with white streaks in front; frons with lateral white lines, pectus whitish; legs whitish and brown, the tibiæ and tarsi banded with black and white; the ventral surface of abdomen whitish with some rufous at extremity. Fore wing whitish suffused and irrorated with dark brown; subbasal line white, oblique, from costa to median nervure; antemedial line blackish, defined on each side by white towards costa, oblique to submedian fold, incurved at vein 1; two oblique sinuous blackish medial lines defined on outer side by white at costa, slightly angled outwards at vein 1; a minute white annulus in middle of cell; reniform with white annulus, extending to well below the cell, its centre defined by black-brown and constricted at middle, some black-brown before it in the cell and a band beyond it from costa where it is defined on inner side by white; postmedial line blackish defined on outer side by white, slightly excurved and waved to vein 3 where it is retracted to lower angle of cell, then oblique and strong in submedian interspace, a dark shade beyond it from vein 3 to inner margin and some white points on costa; subterminal line double, dark, sinuous, a black-brown band before it from costa to vein 3, angled outwards below vein 7, then oblique, a series of small black lunules before termen; a fine waved blackish terminal line; cilia with fine white lines at base and near tips. Hind wing grey-brown; a dark discoidal lunule; traces of two sinuous dark medial

lines; postmedial line blackish slightly defined on outer side by whitish, waved; subterminal line black, strong, angled outwards at discal fold and ending on termen at vein 1; the terminal area with slight reddish streaks on the veins; a quadrate terminal black spot below vein 7 defined by ochreous white and with white streak below it, followed by a series of black striæ defined on inner side by whitish before termen; a fine waved black terminal line; cilia with fine white line at base, the tips whitish at discal fold. Underside of fore wing variegated white and brown, the postmedial area red-brown except on inner area, orbicular with black centre, the reniform with small black spots above and below connected by a dark striga, a double oblique sinuous medial line, waved postmedial line, oblique to vein 4, then incurved, waved subterminal line, a series of black lunules before termen, oblique towards apex; hind wing white irrorated with brown, the postmedial area suffused with brown to vein 2, a black spot in middle of cell and large discoidal lunule, double waved medial line excurved beyond the cell, waved postmedial line, strong black subterminal shade angled outwards at discal fold, black spot on termen below vein 7, and series of black and white striæ before termen.

Hab. Br. Guiana, Demerara (*Rodway*), 1 ♀ type. *Exp.* 40 millim.

7967. **Safia amazonica.** (Plate CCXXVII. fig. 5.)

Lacera amazoniea, Butl. Trans. Ent. Soc. 1879, p. 57.

♀. Head and thorax red-brown; antennæ fuscous; pectus and legs whitish mixed with brown, the tarsi fuscous ringed with white; abdomen reddish brown with slight pale segmental lines, the ventral surface whitish irrorated with brown. Fore wing red-brown, the basal area, inner half of medial area, and costal area to beyond the postmedial line irrorated with whitish; subbasal line double, brown filled in with whitish, excurved below costa and ending at median nervure; antemedial line double, brown, the lines defined on outer side by whitish, incurved in cell and excurved in submedian interspace; a slight dark double sinuous medial line excurved in the cell, followed by a single line; reniform with white annulus, its centre defined by dark brown and with small blackish annuli in upper and lower parts, somewhat constricted at middle; postmedial line blackish, oblique towards costa, then waved, at vein 3 retracted to lower angle of cell, then oblique and slightly excurved at vein 2, the area between it and the subterminal line pale red-brown below vein 2; subterminal line indistinctly double, dark brown, angled inwards at vein 7, then oblique to vein 2 where it is angled inwards, then bent outwards to tornus; a series of dark striæ before termen and a fine pale line at base of cilia. Hind wing red-brown; an obscure brown discoidal lunule; an indistinct double waved medial line filled in with whitish, arising at vein 6, incurved to lower angle of cell, then represented by whitish and dark striæ on vein 1; postmedial line double, dark brown filled in with whitish, waved,

excurved to vein 4, then incurved; a dark subterminal line bent outwards to tornus, the area beyond it redder except towards apex; a small black spot on termen below vein 7 defined on inner side by white, followed by a series of dark striæ defined on inner side by a slight whitish line; a fine waved dark terminal line and whitish line at base of cilia; the underside whitish irrorated with brown, the terminal area suffused with red-brown, the discoidal lunule large and distinct, the double medial line distinct on inner area.

Hab. Brazil, Amazons, R. Jutahi, Santarem (*Trail*), 2 ♀ type. *Exp.* 48–52 millim.

*7968. **Safia olearos.** (Plate CCXXVII. fig. 6.)

Safia olearos, Schaus, Insec. Inscit. Menstr. i. p. 26 (1913).

♂. Head, thorax, and abdomen black-brown; palpi with fine white line at side of 2nd joint. Fore wing reddish brown suffused with black-brown; a waved black subbasal line from costa to vein 1; antemedial line black, oblique to submedian fold, inwardly oblique to vein 1 and bent outwards to inner margin; an elliptical black discoidal annulus; medial line black, excurved to the reniform, strongly incurved below the cell, excurved below submedian fold and joining the antemedial line at inner margin; an indistinct double waved blackish line excurved beyond the cell, then incurved; postmedial line black, excurved below costa, incurved at discal fold, angled outwards below vein 5, then strongly incurved, some white points beyond it on costa; subterminal line faint, pale defined on inner side by black-brown, strongly towards costa, waved, excurved below vein 7 and at middle; a fine waved black terminal line. Hind wing dark reddish brown; traces of a medial line and double dentate postmedial line; subterminal line black, very slightly excurved below vein 7 and at middle; an indistinctly double, fine slightly waved line before termen; a waved black terminal line; the underside reddish brown tinged with grey, an indistinct sinuous subterminal line.

Hab. Fr. Guiana, St. Jean Maroni (*Schaus*), type † ♂ in U.S. Nat. Mus. *Exp.* 38 millim.

7969. **Safia meretricia.** (Plate CCXXVII. fig. 7.)

Campometra meretricia, Schaus, A. M. N. H. (8) vii. p. 52 (1911).

♂. Head and thorax white mixed with red-brown and dark brown, the patagia with small blackish patches near base; palpi dark brown with some white at the extremities of the joints; pectus and legs pale reddish brown, the tarsi black ringed with white; abdomen whitish irrorated with brown, the ventral surface tinged with red-brown. Fore wing white, the basal area suffused in parts with blackish and with some ochreous below the costa, the terminal area suffused with reddish brown; subbasal line slight, black defined on outer side by white, sinuous, from costa to submedian fold;

antemedial line indistinctly double, blackish filled in with white, sinuous to median nervure where it is bent outwards, then oblique; traces of a double waved medial line filled in with brownish suffusion; orbicular a faint minute blackish annulus; reniform faintly defined at sides by brown and with some ochreous beyond it; a dark patch defined by white on postmedial part of costa; postmedial line slight, blackish, defined on outer side by white at costa, minutely waved and oblique to vein 3, then retracted to lower angle of cell, then erect and minutely waved; subterminal line black, arising at vein 7, forming slight rather dentate marks in the interspaces to vein 3, then somwhat incurved; a series of black striæ before termen, defined on inner side by whitish above and below vein 5 and below vein 2; a slight waved dark terminal line and fine pale line at base of cilia which are whitish at vein 5. Hind wing white tinged with brown and with some dark irroration, the terminal area suffused with brown; traces of two sinuous dark medial lines and of a sinuous dark postmedial line; subterminal line slight, blackish, minutely waved, a brown shade before it; a series of black striæ and points before termen defined on inner side by whitish above and below vein 5 and towards tornus, a slight waved dark terminal line; cilia whitish at vein 5; the underside whitish tinged with pale red-brown, a dark discoidal lunule, curved postmedial line, subterminal shade, and series of striæ before termen.

Hab. Costa Rica, Sixola R. (*Schaus*), 1 ♂. *Exp.* 50 millim.

7970. **Safia leucopis**, n. sp. (Plate CCXXVII. fig. 8.)

♀. Head and thorax pale red-brown mixed with some grey-white; palpi dark brown with some white at the extremities of the joints; tarsi banded with black; abdomen pale red-brown tinged with grey, the ventral surface brownish white. Fore wing greyish tinged with pale red-brown and with slight dark irroration, the veins with slight dark streaks; subbasal line slight, blackish, oblique, from costa to submedian fold; antemedial line black with a small dark mark before it on costa defined on inner side by a whitish striga, slightly sinuous to median nervure, then inwardly oblique, a paler band beyond it followed by two sinuous dark medial lines; reniform white irrorated with brown; a dark patch on postmedial part of costa broadly defined by whitish confluent with the reniform; postmedial line black, arising from the dark patch, oblique to below vein 7, then oblique and sinuous to vein 3 where it is retracted to lower angle of cell, then erect and dentate; subterminal line brown slightly defined on each side by whitish, oblique, slightly dentate; a series of black striæ before termen defined on inner side by whitish; a fine waved black terminal line and pale line at base of cilia. Hind wing greyish suffused with pale red-brown and with slight dark irroration; a white point at lower angle of cell; two indistinct waved dark medial lines; postmedial line slight, indistinct and oblique below

costa, then blackish and slightly waved; subterminal line black faintly defined on each side by whitish, slightly sinuous; a series of black striæ faintly defined on inner side by whitish before termen; a fine waved black terminal line and whitish line at base of cilia; the underside whitish irrorated with dark brown, a black discoidal lunule, three strong waved black lines beyond the cell, a broad red-brown subterminal shade, a series of black striæ before termen.

Hab. Venezuela, Merida (*Neuburger*), 1 ♀ type. *Exp.* 58 millim.

7971. **Safia aperta.** (Plate CCXXVII. fig. 9.)

Homoptera aperta, Wlk. xiii. 1071 (1857).

Head, thorax, and abdomen grey tinged with red-brown and mixed with blackish; antennæ ringed with black; palpi blackish; frons with black lateral bars; pectus rufous; tarsi blackish ringed with white; ventral surface of abdomen brownish white. Fore wing grey tinged with brown and irrorated with black-brown, the basal area suffused with black-brown; subbasal black striæ from costa and cell; antemedial line black, inwardly oblique below submedian fold; traces of a double oblique dentate dark medial line; a dark point in middle of cell; reniform with whitish annulus, its centre obscurely defined by blackish and with some dark suffusion above it on costal area; postmedial line blackish, oblique to below vein 7, then incurved and with small black spot on it at discal fold, excurved and waved to vein 3, then bent inwards to the reniform and waved to inner margin, a blackish spot beyond it on costa followed by alternating black and pale streaks; subterminal line indistinct, blackish, diffused, oblique below costa, slightly angled outwards below vein 7, then oblique and waved; a line formed of black striæ before termen; a slight dark terminal line and fine whitish line at base of cilia. Hind wing grey suffused with brown, some blackish irroration along vein 1; postmedial line faint, double, dark, excurved below costa, then slightly sinuous; subterminal line faint and excurved below costa, black, slightly sinuous and with some whitish beyond it below vein 6; a fine black line before termen and fine white line at base of cilia; the underside whitish slightly irrorated with blackish, the terminal area suffused with brown, a blackish discoidal lunule, two rather diffused sinuous medial lines, and a waved postmedial line.

Hab. Argentina, Corrientes, Goya (*Perrins*), 1 ♂; Hab. ign., 2 ♀ type. *Exp.* ♂ 52, ♀ 58 millim.

7972. **Safia permixta.** (Plate CCXXVII. fig. 10.)

Safia permixta, Schaus, A. M. N. H. (8) vii. p. 55 (1911).

♂. Head and thorax dark brown mixed with grey and some white scales; tegulæ with blackish line near tips; antennæ ringed

with black; palpi blackish; frons with lateral black bars; pectus clothed with rufous hair; tarsi black ringed with white; abdomen grey suffused and irrorated with dark brown. Fore wing pale grey tinged in parts with brown and thickly irrorated with black-brown, the basal area suffused with black-brown; subbasal line black, minutely waved, from costa to submedian fold; antemedial line black, inwardly oblique and slightly sinuous; an indistinct treble oblique sinuous medial line; reniform whitish with its centre defined by blackish and some black before it; postmedial line black, oblique to below vein 7, then inwardly oblique to discal fold, then excurved, at vein 3 retracted to lower edge of reniform, and excurved and waved to inner margin, a black-brown spot beyond it on costa followed by an oblique striga; subterminal line double, blackish, oblique, waved below discal fold; a series of black striæ before termen and a waved black terminal line. Hind wing grey suffused with brown and irrorated with black-brown; traces of two sinuous brown lines beyond the cell; postmedial line slight, blackish, minutely waved, some blackish suffusion from it to the subterminal line which is black, angled outwards at discal fold where there is a diffused black spot beyond it, then incurved; a series of black striæ before termen and a waved black terminal line; the underside whitish irrorated with dark brown, a large black discoidal lunule, two rather diffused waved medial lines excurved beyond the cell, a waved postmedial line excurved below costa, and a broad blackish subterminal band.

Hab. Costa Rica, Sitio (*Schaus*), 1 ♂. *Exp.* 54 millim.

7973. Safia celia.

Phalæna celia, Cram. Pap. Exot. iv. p. 109, pl. 346. ff. E, F (1781); Druce, Biol. Centr.-Am., Het. i. p. 347.

♂. Head and tegulæ rufous, the latter with black line near base and black and white tips; thorax dark brown mixed with grey; palpi blackish in front; frons with black lateral bars and slight line above; pectus clothed with bright rufous hair; tarsi black ringed with white; abdomen grey-brown, the crests blackish. Fore wing grey suffused with brown and irrorated and striated with blackish, the basal half darker; subbasal line black, excurved below costa and ending at submedian fold; antemedial line black, sinuous, defined on outer side by a greyish white band emitting faint streaks outwards in cell and submedian fold and on inner margin; an indistinct double sinuous dark medial line; reniform faintly defined by blackish; postmedial line very indistinct, blackish, waved, oblique to discal fold, then inwardly oblique, a wedge-shaped black mark beyond it on costa; subterminal line indistinct, double, oblique, waved; a series of black striæ before termen, a slight waved blackish line just before termen, and fine pale line at base of cilia. Hind wing brown mixed with grey and

irrorated with blackish, the postmedial area tinged with crimson; traces of a double waved medial line and of a slight waved postmedial line; subterminal line black, waved, faintly defined on outer side by whitish, a patch of fuscous suffusion beyond it at middle extending to termen; a series of black striæ before termen, a slight waved blackish line just before termen, a fine pale line at base of cilia; the underside whitish striated with black, two waved blackish antemedial lines, the outer with the slight white discoidal lunule on it, a waved postmedial line, and diffused subterminal shade.

Fig. 53.—*Safia celia*, ♂. ½.

♀. Fore wing with some blotches of fuscous brown on medial area and a large patch at middle of terminal area; hind wing sometimes with hardly any crimson tinge on medial area.

Hab. Panama, Chiriqui (*Champion*), 1 ♀, Godman-Salvin Coll., La Chorrera (*Dolby-Tyler*), 1 ♀; Venezuela, 1 ♂; Br. Guiana (*Kaye*), 1 ♀; Brazil, Amazons, Rio Trombetus (*Trail*), 1 ♀. *Exp.* 48–50 millim.

7974. **Safia bruma.** (Plate CCXXVII. fig. 11.)

Safia bruma, Schaus, A. M. N. H. (7) viii. p. 47 (1901).

♂. Head, thorax, and abdomen dark reddish brown slightly mixed with ochreous; tarsi black ringed with whitish. Fore wing dark red-brown slightly mixed with ochreous, the basal area blackish brown; bounded by the slight hardly waved dark antemedial line faintly defined on outer side by ochreous; a faint pale waved medial line; reniform faintly defined by blackish and ochreous

on inner side and by some minute whitish spots on outer; a conical black postmedial patch defined by ochreous on costa, the faint waved blackish postmedial line arising from its outer edge, incurved below vein 4, some alternating ochreous and blackish streaks beyond it on costa; subterminal line very indistinct, oblique and ochreous towards costa, then dark, waved; a series of slight ochreous and dark striæ before termen and a slight waved dark terminal line. Hind wing dark reddish brown slightly mixed with ochreous; minute ochreous spots in and beyond lower angle of cell; an indistinct minutely waved dark postmedial line and more distinct subterminal line; a series of ochreous and blackish striæ before termen and a fine blackish waved terminal line; the underside fuscous brown slightly mixed with ochreous, a faint blackish postmedial line and diffused subterminal shade.

Hab. Mexico, Orizaba (*Schaus*), type † ♂ in U.S. Nat. Mus.; Costa Rica, Juan Vinas (*Schaus*), 1 ♂. *Exp.* 54 millim.

7975. Safia caminata. (Plate CCXXVII. fig. 12.)

Campometra caminata, Schaus, A. M. N. H. (7) viii. p. 43 (1901).

♀. Head and thorax red-brown mixed with ochreous; tegulæ with blackish band near tips, the patagia with whitish band at base and curved blackish marks at middle; pectus and legs ochreous tinged with brown; abdomen pale brown tinged with fuscous, the two basal segments with reddish ochreous bands, the extremity pale. Fore wing reddish ochreous suffused in parts with black-brown; subbasal line ochreous defined on inner side by black, slightly angled outwards below costa, then oblique to inner margin; an oblique ochreous streak defined below by a black patch below the cell before the strongly excurved ochreous antemedial line defined on each side by black; an indistinct greyish medial line slightly defined on inner side by black; reniform white, narrow above, its lower extremity produced to a point, its inner edge oblique, a black point in its upper part and wedge-shaped mark in lower part; postmedial line ochreous defined on inner side by black, excurved below vein 7 and angled outwards at veins 4, 3 to near subterminal band, then almost obsolete and retracted to lower angle of cell and outwardly oblique to inner margin, an oblique ochreous streak beyond it on costal area, some blackish spots between veins 7 and 4, and an ochreous streak defined above and below by black on vein 2; a curved ochreous white subterminal band slightly defined on each side by blackish and with slight blackish spots beyond it from below costa to vein 5 and at submedian fold; a series of black striæ before termen and a slight waved brown terminal line. Hind wing ochreous suffused with reddish brown, the postmedial area browner; a minutely dentate sinuous dark postmedial line defined on outer side by ochreous; a curved ochreous subterminal band defined on each

side by black; a series of black striæ before termen and slight crenulate brown terminal line; the underside ochreous white, a brown discoidal lunule, postmedial line excurved below costa, and brown suffusion on terminal area.

Hab. Mexico, Vera Cruz (*Rümeli*), 1 ♀, Godman-Salvin Coll.; Venezuela, Aroa, type † ♀ in U.S. Nat. Mus. *Exp.* 54 millim.

7976. **Safia leucoplaga.** (Plate CCXXVII. fig. 13.)

Campometra leucoplaga, Schaus, A. M. N. H. (8) vii. p. 51 (1911).

♀. Head and thorax red-brown mixed with whitish, the patagia with white patches edged with blackish in front; palpi blackish with some white at the extremities of the joints; pectus and legs pale grey-brown, the tarsi blackish ringed with white; abdomen pale red-brown mixed with whitish, the 2nd segment with subdorsal black patches. Fore wing pale red-brown; a minute white spot at base; subbasal line black defined on each side by diffused white, waved, from costa to vein 1, a small black spot below it on inner margin; antemedial line black on a broad band of white suffusion, waved; an indistinct, double, waved, brown medial line; orbicular a small round white spot; reniform a large white patch connected with the costa by a bar, its edges waved and its outer edge produced at vein 6, its centre faintly defined by brown scales; postmedial line blackish, waved, defining the outer edge of the reniform, oblique to below vein 7, at vein 3 retracted to just below angle of cell, then erect and somewhat dentate, a wedge-shaped white patch with waved edges beyond it from costa to discal fold, with a minute brown spot on it at costa; subterminal line black, arising at vein 7, oblique, forming small dentate marks below veins 7, 5, 4, then minutely waved; a series of minute black lunules defined on inner side by white points before termen; a slight waved dark terminal line; cilia white at veins 5 and 2. Hind wing pale red-brown with some dark irroration along vein 1; white points in and beyond lower angle of cell; traces of two sinuous dark medial lines; postmedial line indistinct, blackish, minutely waved; subterminal line black, arising at vein 7, minutely waved, incurved and strong between vein 4 and submedian fold, some white beyond it at tornus; a series of minute black lunules defined on inner side by white points before termen; a slight waved dark terminal line; cilia white at veins 5 and 2; the underside whitish suffused with brown, diffused curved medial and postmedial lines, a broad dark brown subterminal shade, and series of blackish lunules before termen.

Hab. Costa Rica (*Schaus*), type † in U.S. Nat. Mus.; Panama, La Chorrera (*Dolby-Tyler*), 1 ♀. *Exp.* 56 millim.

7977. Safia amata.

Homoptera amata, Druce, Biol. Centr.-Am., Het. i. p. 345, pl. 31. f. 4 (1890).

♀. Head and thorax dark red-brown irrorated with white, the vertex of head white tinged with rufous; palpi with white rings at the extremities of the joints; pectus and legs grey-brown, the tarsi ringed with white; abdomen grey-brown irrorated with white, a small dorsal white spot on 2nd segment and ochreous spot on 3rd segment. Fore wing greenish grey irrorated with white and some blackish scales; subbasal line black defined on each side by white, sinuous, from costa to median nervure, a white and blackish mark below the cell; antemedial line black slightly defined on each side by white, waved and somewhat inwardly oblique; two indistinct sinuous dark medial lines; a minute dark spot in middle of cell; reniform defined by small white spots, rather produced at lower extremity; a dark patch followed by a slight bar and both defined by white on postmedial part of costa; postmedial line black arising at vein 7, waved, at vein 3 retracted to lower angle of cell, then erect and dentate; subterminal line blackish slightly defined on outer side by whitish, oblique, sinuous, forming a small dentate black spot below vein 4; the terminal area with slight brown and whitish streaks in the interspace with small black spots defined on inner side by white on them before termen; a slight waved dark terminal line with white points at the interspaces. Hind wing brown suffused with greenish grey and with slight dark irroration except on costal area, in submedian fold and on inner margin; traces of a double sinuous medial line, minutely waved postmedial and subterminal lines, the latter faintly defined on outer side by whitish, all interrupted on the brown areas; a series of minute black spots defined on inner side by white before termen; a fine waved dark terminal line and pale line at base of cilia; the underside brown irrorated with whitish, diffused dark medial and postmedial lines, and a subterminal shade.

Hab. Panama, Chiriqui (*Champion*), 1 ♀ type, Godman-Salvin Coll. *Exp.* 50 millim.

7978. Safia amella. (Plate CCXXVII. fig. 14.)

Campometra amella, Guen. Noct. iii. p. 25, pl. 18. f. 8 (1852); Smith, Cat. Noct. N. Am. p. 372; Druce, Biol. Centr.-Am., Het. ii. p. 507.
Homoptera integerrima, Wlk. xiii. 1057 (1857); Smith, Cat. Noct. N. Am. p. 372.
Homoptera stylobata, Harv. Can. Ent. viii. p. 155 (1876).
Homoptera amata, Druce, Biol. Centr.-Am., Het. ii. p. 507 (part.).
Campometra distilla, Dyar, Proc. U.S. Nat. Mus. xliv. p. 300 (1913).

Head, thorax, and abdomen dark reddish brown mixed with grey-white; palpi black-brown, the 3rd joint white at base and tip; pectus, legs, and ventral surface of abdomen dark brown mixed with grey, the tarsi blackish ringed with white. Fore wing grey suffused with reddish brown and irrorated with blackish;

subbasal line slight, blackish, maculate, from costa to vein 1; the antemedial area with a blackish shade; antemedial line black, inwardly oblique, minutely waved; a double diffused sinuous black medial line filled in with blackish; reniform white slightly defined by dark brown and slightly irrorated with brown, a white bar above it from costa and white streak from its upper extremity to the postmedial line; a dark postmedial spot defined by white suffusion on costa, the slight black minutely waved postmedial line arising from below it, at vein 3 retracted to lower angle of cell, then erect; subterminal line blackish, sinuous, angled outwards below veins 7 and 4, then incurved; a series of black striæ before termen; a slight waved dark terminal line and fine pale line at base of cilia. Hind wing grey-brown; traces of a sinuous double dark medial line; postmedial line slight, dark, faintly defined on outer side by grey, minutely waved; a faint dark subterminal shade with blackish striga at tornus; a series of blackish striga before termen and faint waved dark terminal line; the underside grey-brown irrorated with whitish, diffused dark medial and postmedial lines and a faint subterminal shade.

Ab. 1. *distilla*. Blacker brown.—Mexico, Guatemala.

Hab. U.S.A., Georgia, Florida (*Doubleday*), 2 ♂, 2 ♀ type *integerrima*, Texas (*Belfrage*), 1 ♂, 2 ♀ type *stylobata*, Colorado; Mexico, Jalapa (*Trujillo*), 2 ♀; Guatemala (*Sadler*), 1 ♀, Guatemala City (*Rodriguez*), 1 ♀, Godman-Salvin Coll. *Exp.* 44–56 millim.

7979. Safia mollis. (Plate CCXXVII. fig. 15).

Yrias mollis, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 407, pl. viii. f. 3 (1880).

♀. Head and thorax black-brown mixed with white, the metathoracic crest pale golden yellow above; palpi blackish with some white at base and extremity of 3rd joint; pectus and legs black-brown, the tarsi black ringed with white; abdomen blackish irrorated with grey, the 2nd segment with whitish dorsal band, the 3rd with minute white spot, the ventral surface greyer. Fore wing pale brownish grey irrorated with black, the costal area with alternating black and white marks to the postmedial line; a minute white spot at base; subbasal line black, waved, from costa to vein 1, followed by a black shade; antemedial line black, waved, double below the cell; a double waved black medial line; a minute black spot in middle of cell; reniform black, its annulus represented by minute white spots and a larger spot at middle of outer edge; postmedial line black, arising from a triangular spot on costa, waved to vein 3 where it is angled inwards to lower angle of cell, then excurved and dentate, an oblique bar beyond it from costa and a diffused waved black line from vein 7 to inner margin; subterminal line double, black, waved, the outer line less distinct, somewhat angled outwards below veins 7 and 4; a series of minute

black lunules before termen connected by short streaks with a waved black terminal line with whitish points at the interspaces. Hind wing pale grey irrorated with black, the costal area, cell, submedian fold, and inner margin suffused with brown; a white point at lower angle of cell; double waved black medial and postmedial lines; subterminal line double, black, the inner line crenulate, the outer less distinct and sinuous; a series of minute black lunules before termen connected by short streaks with the waved black terminal line; the underside blue-grey suffused with fuscous, a discoidal lunule defined by blackish, medial line excurved beyond the cell, curved postmedial line, and subterminal shade.

Hab. Surinam; Fr. Guiana, Cayenne (*Schaus*), 1 ♀; Peru, Pozuzo, 1 ♀. *Exp.* 42–46 millim.

7980. **Safia chalybeata**, n. sp. (Plate CCXXVII. fig. 16.)

♂. Head, thorax, and abdomen black-brown; palpi irrorated with white; frons with the lower part white and white lines at sides; fore and mid tibiæ with the fringes of hair white; tarsi black ringed with white; ventral surface of abdomen ochreous whitish mixed with brown. Fore wing with the basal half black-brown with a leaden blue gloss, the terminal half grey-brown tinged with fuscous; a slight sinuous ochreous subbasal line from costa to submedian fold; antemedial line black, waved; a small black spot in middle of cell; reniform with faint dark outline and white points representing its annulus; medial line black, defining the dark area, slightly excurved at vein 1; postmedial line blackish, obliquely downcurved below costa, then minutely waved, at vein 3 retracted to lower angle of cell and excurved below submedian fold, a black patch beyond it on costa; subterminal line black to vein 6, then obsolescent, waved; the terminal area with a slight leaden blue gloss; a series of black and white points before termen connected by slight black streaks with the fine waved black terminal line. Hind wing black-brown with a leaden blue gloss, the costal area paler; an indistinct waved blackish postmedial line; subterminal line black, almost obsolete towards costa, angled outwards at discal fold, then incurved to submedian fold; a series of black striæ before termen connected by short streaks with the waved black terminal line; the underside ochreous grey irrorated with brown, the terminal area dark brown, a small discoidal lunule defined by blackish, medial line waved to lower angle of cell, and waved postmedial line.

Hab. Fr. Guiana, St. Laurent Maroni, 1 ♂ type. *Exp.* 36 millim.

7981. **Safia minta**. (Plate CCXXVII. fig. 17.)

Safia minta, Schaus, A. M. N. H. (7) viii. p. 46 (1901).
Safia minor, Schaus, A. M. N. H. (8) vii. p. 54 (1911).

♂. Head, thorax, and abdomen dark brown mixed with greyish; antennæ blackish; palpi blackish, the 3rd joint whitish at base

and tips; pectus and ventral surface of abdomen tinged with red-brown. Fore wing grey suffused with brown and irrorated with fuscous, the basal area suffused with fuscous; a slight subbasal black striga from costa; antemedial line double, blackish filled in with grey, slightly sinuous and somewhat oblique below the cell; medial line double, blackish filled in with grey, oblique and slightly sinuous; reniform with faint whitish annulus slightly defined by blackish, a pale mark above it on costa with blackish suffusion before and beyond it; postmedial line indistinctly double, dark, waved, at vein 3 retracted to lower angle of cell, then somewhat excurved; an oblique blackish mark from costa before the subterminal line, which is indistinct, double, dark, waved, slightly excurved below vein 7, then oblique; a series of blackish striæ before termen defined on inner side by whitish and with dark streaks from them to termen. Hind wing grey suffused with brown and slightly irrorated with fuscous; an indistinct double waved blackish medial line; postmedial line black, oblique, slightly waved; subterminal line black, slightly waved towards costa, angled outwards at discal fold, then oblique and almost straight; a series of black striæ before termen defined on inner side by whitish; a fine waved black terminal line and pale line at base of cilia; the underside whitish tinged and irrorated with brown, a slight blackish discoidal lunule, waved medial line excurved beyond the cell, waved postmedial line, and diffused subterminal line expanding on costal area.

Hab. Costa Rica, Sixola R., type † *minor* in U.S. Nat. Mus; Venezuela, Aroa, 1 ♂. *Exp.* 38 millim.

7982. **Safia obscura.** (Plate CCXXVII. fig. 18.)

Campometra obscura, Schaus, A. M. N. H. (7) viii. p. 44 (1901).

Head and thorax red-brown mixed with blackish; antennæ blackish; palpi blackish, the 3rd joint white at base and extremity; pectus and legs grey mixed with brown, the tarsi black ringed with white; abdomen grey-brown, the crests blackish. Fore wing reddish brown with slight dark irroration, the basal half and postmedial costal area suffused with dark brown; a sinuous black subbasal line from costa to submedian fold, defined on outer side by reddish; antemedial line black, inwardly oblique, sinuous, angled outwards at median nervure; a double oblique sinuous blackish medial line; reniform slightly defined by black and by white striæ and points, rather triangular, a pale bar above it from costa; a blackish patch on costa before the postmedial line, which is black, waved to vein 3, then retracted to origin of vein 2, then erect and dentate, some whitish points beyond it on costa; subterminal line blackish with some black suffusion before it towards costa, oblique, waved, slightly angled outwards below vein 7; a series of minute black lunules before termen faintly defined on inner side by whitish; a fine waved dark terminal line and pale line at base of cilia. Hind wing red-brown with some dark irroration; white

points in and beyond lower angle of cell; traces of a double sinuous dark medial line; postmedial line slight, black, sinuous, a slight blackish shade beyond it; subterminal line black, obsolescent towards costa, slightly angled outwards at discal fold, then somewhat sinuous; a series of minute black lunules before termen defined on inner side by whitish; a fine waved black terminal line and pale line at base of cilia; the underside whitish irrorated with brown, a discoidal lunule defined by blackish, double minutely waved medial line, minutely waved postmedial line, subterminal shade, and series of small black spots before termen.

Ab. 1. Fore wing with large black patch on inner half of medial area.—Grenada.

Hab. Panama, La Chorrera (*Dolby-Tyler*), 1 ♂, 2 ♀; Grenada (*H. H. Smith*), 1 ♀; Fr. Guiana, St. Jean Maroni (*Schaus*), 1 ♀. *Exp.* 36–48 millim.

7983. Safia albidiscata. (Plate CCXXVII. fig. 19.)

Yrias albidiscata, Schaus, A. M. N. H. (7) viii. p. 49 (1901).

♀. Head, thorax, and abdomen reddish brown mixed with dark brown and grey, the last with the crests blackish; palpi with the 3rd joint black, white at base and extremity; pectus, legs, and ventral surface of abdomen grey mixed with dark brown, the fore and mid tibiæ ringed with white, the tarsi black ringed with white. Fore wing grey suffused and irrorated with dark brown and faintly tinged with reddish; subbasal line black slightly defined on each side by white, sinuous, from costa to submedian fold; antemedial line black slightly defined on each side by white, minutely waved, excurved to submedian fold; an indistinct double sinuous dark medial line; reniform with its centre defined by blackish, its inner side with white points above and below, its outer with white bar and two points at lower extremity, connected with the costa by a white bar; a blackish patch on costa before the postmedial line, which is black, defined on outer side by white towards costa, dentate to vein 3, then angled inwards to below end of cell, then excurved and sinuous, some white points beyond it on costa; subterminal line blackish, defined on outer side by white towards costa, oblique, sinuous, angled outwards below veins 7 and 4; a series of minute black lunules with white points before them before termen; a waved black terminal line and fine pale line at base of cilia. Hind wing reddish brown tinged with grey and with slight dark irroration; a minute white point at lower angle of cell; postmedial line faint, blackish, minutely waved; subterminal line slight, black, waved, obsolescent towards costa; a series of minute black lunules with white points before them before termen; a fine waved black terminal line; the underside bluish grey irrorated with brown, a slight dark discoidal lunule defined on outer side by whitish placed on a faint diffused medial line, a diffused sinuous postmedial line, subterminal shade, and series of dark striæ before termen.

Ab. 1. Fore wing with the reniform entirely filled in with pure white.

Hab. Mexico, Vera Cruz, Paso San Juan (*Schaus*), 3 ♀. *Exp.* 40–44 millim.

7984. **Safia decessa.** (Plate CCXXVII. fig. 20.)

Homoptera decessa, Wlk. xiii. 1072 (1857).
Homoptera trailii, Butl. Trans. Ent. Soc. 1879, p. 40.

♀. Head, thorax, and abdomen dark reddish brown mixed with some grey; tibiæ at extremities and the tarsi ringed with whitish. Fore wing dark brown with some red and grey scales and suffused in parts with violaceous grey; subbasal line black, minutely waved, from costa to submedian fold; antemedial line black, minutely waved, incurved below submedian fold; an indistinct double sinuous dark medial line; a small blackish spot in middle of cell; reniform defined by white points and striæ; a dark patch on costa defined by whitish before the postmedial line, which is black, defined on outer side by whitish towards costa and inner margin, minutely dentate, at vein 3 retracted to lower angle of cell, then erect, some whitish points beyond it on costa; subterminal line black, slightly angled outwards below veins 7 and 4, then incurved; a series of minute black spots defined on inner side by whitish before termen; a fine waved dark terminal line and pale line at base of cilia. Hind wing reddish brown irrorated with some red and blackish scales except on costal area; white points in and beyond lower angle of cell; traces of a double sinuous dark medial line; postmedial line slight, black, minutely waved, somewhat incurved beyond lower angle of cell; subterminal line black, minutely waved, arising at vein 6, a leaden grey shade with some white scales on it beyond it at middle; a series of minute black spots defined on inner side by whitish before termen; a fine waved dark terminal line and pale line at base of cilia; the underside brown irrorated with grey, traces of diffused dark medial and postmedial lines and subterminal shade.

Hab. St. Vincent, 1 ♀ type; Brazil, Amazons, R. Purus, Paviti (*Trail*), 1 ♀ type *trailii*. *Exp.* 48 millim.

7985. **Safia acharia.** (Plate CCXXVIII. fig. 1.)

Noctua acharia, Cram. Pap. Exot. iv. p. 103. pl. 346. f. C (1781).

♂. Head and thorax dark reddish brown mixed with some ochreous; palpi blackish with pale streaks in front; tarsi black ringed with whitish; abdomen grey-brown, the crests darker, the ventral surface ochreous tinged with brown. Fore wing pale reddish brown irrorated and in parts suffused with dark brown; subbasal line faint, pale, sinuous, from costa to submedian fold; antemedial line black, waved; two sinuous dark medial lines filled in with blackish; a minute black annulus in middle of cell; reniform defined by blackish and with some white points on its outer edge; a dark postmedial mark on costa defined at sides by pale striæ;

postmedial line black, arising at vein 7 where it is bent outwards, then sinuous, oblique to vein 3, then bent inwards to lower angle of cell, and erect to inner margin, some white points beyond it on costa; subterminal line faint, dark, oblique, minutely dentate, a diffused whitish line beyond it between veins 6 and 2; a series of black striæ defined on inner side by whitish before termen and a fine waved dark terminal line. Hind wing pale red-brown suffused and irrorated with dark brown; traces of a double sinuous medial line; postmedial line faint, dark, sinuous, angled inwards beyond lower angle of cell; subterminal line blackish, waved, arising at vein 6 and slightly angled outwards at discal fold, a diffused whitish line beyond it; a series of blackish striæ before termen defined on inner side by whitish; a slight waved blackish terminal line; the underside whitish irrorated with brown, the terminal area black-brown, a dark discoidal lunule, waved medial line excurved beyond the cell, postmedial line excurved and waved from below costa to vein 4, then oblique, a series of minute whitish lunules before termen, and some whitish at middle of termen.

♀. Fore wing without the pale line beyond the subterminal line.

Hab. Surinam; Brazil, Amazons, Manãos (*Trail*), 1 ♂, R. Purus, Vistalinda (*Trail*), 1 ♀. *Exp.* ♂ 38, ♀ 44 millim.

7986. **Safia abscisa.** (Plate CCXXVIII. fig. 2.)

Safia abscisa, Schaus, A. M. N. H. (8) vii. p. 54 (1911).
Homoptera decessa, Druce, Biol. Centr.-Am., Het. ii. p. 507 (part.), nec Wlk.

♀. Head rufous with some blackish scales between antennæ; thorax dark reddish brown; palpi blackish irrorated with grey; pectus and legs grey mixed with dark brown, the tarsi black ringed with whitish; abdomen dark brown, the ventral surface whitish tinged with brown. Fore wing black-brown with a purplish grey gloss and mixed with some red-brown; subbasal line slight, black, sinuous, from costa to submedian fold; antemedial line black, waved, excurved below the cell; two indistinct sinuous dark medial lines; reniform pale reddish brown defined by pale points; a dark patch defined by pale reddish brown on postmedial part of costa; postmedial line black, arising at vein 7, sinuous, oblique to vein 3, then bent inwards to below end of cell, and erect to inner margin; subterminal line black, oblique, sinuous, angled outwards below veins 7 and 4; a series of black striæ defined on inner side by whitish before termen; a slight waved black terminal line and fine pale line at base of cilia. Hind wing red-brown suffused with dark brown; traces of two sinuous medial lines; postmedial line slight, black, minutely waved; subterminal line black, minutely waved, arising at vein 6, slightly angled outwards at discal fold, then incurved to submedian fold and

with a leaden grey patch beyond it with some whitish suffusion on it; a series of minute black lunules defined on inner side by whitish before termen; a fine waved black terminal line and pale line at base of cilia; the underside whitish thickly irrorated with brown, a dark discoidal lunule, two minutely waved medial lines excurved beyond the cell, postmedial line excurved and minutely waved from below costa to vein 4, then oblique, a dark subterminal shade, and series of minute whitish lunules before termen.

♂. Fore wing with the whitish points before the subterminal points not so distinct.

Ab. 1. Hind wing without whitish on the leaden grey patch beyond the subterminal line.

Hab. Costa Rica, Sta. Clara Valley (*Zurcher*), 1 ♀, Esperanza, (*Schaus*), type † ♂ in U.S. Nat. Mus., Guapiles (*Schaus*), type † ♀; Panama, Chiriqui (*Champion*), 1 ♀, Godman-Salvin Coll. *Exp.* 42 millim.

7987. **Safia barata.** (Plate CCXXVIII. fig. 3.)

Yrias barata, Schaus, A. M. N. H. (7) viii. p. 48 (1901).

♀. Head, thorax, and abdomen ochreous mixed with dark brown; palpi rather darker with ochreous rings at extremities of the joints; tarsi black-brown ringed with ochreous. Fore wing ochreous suffused and irrorated with fuscous brown; a slight irregularly waved black subbasal line from costa to vein 1; antemedial line slight, black, excurved below costa, angled outwards at median nervure, then inwardly oblique and slightly sinuous; an indistinct curved, waved medial line; reniform ochreous with whitish points on its edges, slightly defined at sides by blackish, rather triangular; postmedial line black with ochreous suffusion before it towards costa and an oblique ochreous shade beyond it from costa to vein 7 where it is angled outwards, excurved at veins 5, 4, at vein 3 bent inwards to below lower edge of reniform, then dentate to inner margin; a faint waved dark subterminal line; a series of blackish striæ before termen defined on inner side by ochreous; a waved blackish terminal line and fine ochreous line at base of cilia. Hind wing ochreous suffused with fuscous brown; traces of a waved medial line; a slight waved blackish postmedial line almost obsolete on costal area and with the more distinct black postmedial line just beyond it, angled outwards at discal fold, then incurved and slightly waved to tornus; a series of blackish striæ defined on inner side by ochreous before termen and a waved black terminal line; the underside grey irrorated with brown, a slight dark discoidal lunule, medial line excurved below costa, diffused postmedial line, and subterminal shade.

Hab. Panama, La Chorrera (*Dolby-Tyler*), 2 ♀; Trinidad, Caparo, 2 ♀; Venezuela, Aroa, 1 ♀; Br. Guiana, Demerara (*Rodway*), 1 ♀. *Exp.* 44 millim. Type † ♀ in U.S. Nat. Mus.

*7988. Safia cœruleotincta. (Plate CCXXVIII. fig. 4.)

Safia cœruleotincta, Schaus, Proc. Ent. Soc. Wash. xiv. p. 213 (1912).

♀. Head and thorax dark reddish brown slightly mixed with grey; tarsi ringed with white; abdomen grey-brown, the crests darker. Fore wing reddish brown suffused with blue-grey; subbasal line black-brown, from costa to submedian fold; antemedial line black-brown, minutely waved, slightly angled outwards at submedian fold, expanding into a spot at costa; a slight sinuous dark medial line, excurved in cell and with a black-brown patch beyond it above inner margin; reniform pale rufous defined by brown and with an obliquely curved pale rufous patch above it from costa to the angle of the postmedial line, which is black-brown, obliquely downcurved from costa to below vein 7, then minutely dentate, at vein 3 bent inwards to origin of vein 2, then erect and angled outwards below submedian fold; some whitish points on costa towards apex; subterminal line black-brown, slightly waved, rather diffused towards costa, somewhat angled outwards below vein 7, angled outwards below vein 4, then incurved and with small black-brown patch before it at submedian fold; a series of small black-brown spots before termen with slight streaks from them to termen. Hind wing red-brown, some blackish irroration on vein 1; an indistinct irregularly waved dark postmedial line; a black-brown subterminal line, almost obsolete towards costa, angled outwards at discal fold and excurved at submedian fold; a series of brown points before termen; a faint waved brown terminal line and fine pale line at base of cilia; the underside grey-brown, indistinct diffused curved medial and postmedial lines, a dark subterminal shade, series of points before termen, and waved terminal line.

Hab. Fr. Guiana, St. Jean Maroni (*Schaus*), type † ♀ in U.S. Nat. Mus. *Exp.* 44 millim.

*7989. Safia guapila. (Plate CCXXVIII. fig. 5.)

Campometra guapila, Schaus, A. M. N. H. (8) x. p. 511 (1912).

♂. Head and tegulæ crimson-red mixed with ochreous; palpi dark chocolate-brown, pale at tips; antennæ dark brown; thorax red-brown mixed with grey; pectus and legs dark brown, the tarsi ringed with ochreous; abdomen dark brown. Fore wing dark chocolate-brown mixed with grey, an oblique shade from medial and postmedial parts of costa narrowing to inner margin near base and the terminal area greyer, some crimson irroration in and below the cell; two subbasal ochreous striæ from costa; antemedial line blackish, somewhat dentate to median nervure, then oblique and angled inwards at vein 1; a very indistinct diffused blackish medial line; reniform very obscurely defined, with two whitish striæ on inner side and a black line defined on inner side by whitish

on outer; a postmedial blackish mark defined by whitish suffusion on costa; postmedial line very indistinct, blackish, minutely dentate, at vein 4 bent inwards to below the reniform, then oblique; subterminal line defined on inner side by black-brown suffusion, slightly angled outwards below veins 7, 6, 4, 3, incurved at discal fold and below vein 3; a series of black striæ before termen with minute streaks from them to termen; a waved dark terminal line and fine pale line at base of cilia. Hind wing deep chocolate-brown, the terminal area greyish suffused with red-brown; postmedial line very indistinct, dark, sinuous; subterminal line black-brown, slightly angled inwards at vein 7 and outwards at discal fold, excurved at submedian fold; a series of blackish striæ before termen slightly defined on inner side by whitish and with minute streaks from them to the fine waved dark terminal line; cilia with a fine pale line at base; the underside bluish grey suffused with brown, an indistinct postmedial line excurved below costa, then oblique to tornus, and a subterminal shade.

Hab. Costa Rica, Guapiles (*Schaus*), type † ♂ in U.S. Nat Mus. *Exp.* 46 millim.

7990. **Safia thermochroa**, n. sp. (Plate CCXXVIII. fig. 6.)

♀. Head, thorax, and abdomen red-brown slightly mixed with greyish; palpi and legs dark brown irrorated with greyish, the tarsi blackish ringed with white. Fore wing red-brown suffused and irrorated with dark brown, the terminal area paler red-brown; subbasal line slight, black, sinuous, from costa to submedian fold; antemedial line black, waved; a rather diffused double sinuous black medial line; reniform with indistinct pale annulus, its centre defined by dark brown; a dark mark on costa before the postmedial line, which is black, minutely waved, at vein 3 retracted to lower angle of cell, then erect, some whitish points beyond it on costa; postmedial area suffused with dark brown, deeper towards the subterminal line, which is black, angled outwards below veins 7 and 4 and slightly below vein 3, incurved at discal fold and strongly below the angle at middle; the terminal area with some brown suffusion towards apex and at middle; a series of black striæ before termen, a fine waved dark terminal line, and pale line at base of cilia. Hind wing dark red-brown, the terminal area pale red-brown with some brown suffusion at middle; traces of two sinuous dark medial lines; postmedial line slight, blackish, minutely waved; subterminal line black, diffused on inner side, somewhat excurved at middle; a series of black striæ before termen; a fine waved dark terminal line, and pale line at base of cilia; the underside greyish suffused and irrorated with brown, diffused dark medial and postmedial lines and a broad subterminal shade.

Hab. Br. Guiana, Demerara (*Rodway*), 2 ♀ type. *Exp.* 48 millim.

*7991. Safia mascara. (Plate CCXXVIII. fig. 7.)

Campometra mascara, Schaus, A. M. N. H. (7) viii. p. 42 (1901).

♀. Head and thorax red-brown mixed with fuscous; abdomen red-brown tinged with grey, the crests on 3rd and 4th segments black; pectus and ventral surface of abdomen ochreous whitish, the tarsi fuscous ringed with white. Fore wing red-brown mixed with ochreous, the basal half suffused with fuscous black; subbasal line black, minutely waved, from costa to submedian fold; antemedial line black, slightly angled outwards below costa, then sinuous; a double waved medial line; reniform white irrorated with brown, its centre defined by blackish, some fuscous streaks beyond it; postmedial line black, slightly bent outwards below costa, then waved, at vein 3 bent inwards to lower edge of reniform, then oblique, some fuscous suffusion beyond it and some white points on costa; subterminal line waved, white at costa, then blackish; the terminal area fuscous at apex, with fuscous patch at middle and band from vein 3 to tornus; a series of black striæ before termen, somewhat lunulate on costal half; a fine waved black terminal line and a waved line at middle of cilia. Hind wing ochreous suffused with fuscous brown, the terminal area suffused with rufous except at apex which is fuscous; a slight minutely dentate black postmedial line from vein 6 to inner margin; a minutely waved red-brown subterminal line from vein 6 to tornus with a fuscous band beyond it from vein 4 to tornus and fuscous streaks on veins 4, 3, 2; a series of black striæ before termen and a fine waved black terminal line; the underside ochreous white irrorated with brown except on inner area, a brown discoidal bar on a medial line obsolete towards inner margin, a minutely waved postmedial line, diffused subterminal band, and series of striæ before termen.

Hab. Venezuela, Aroa, type † ♀ in U.S. Nat. Mus. *Exp.* 52 millim.

7992. Safia diodonta, n. sp. (Plate CCXXVIII. fig. 8.)

♀. Head and thorax grey mixed with brown; tarsi black ringed with white; abdomen grey-brown dorsally suffused with fuscous. Fore wing grey suffused with brown and irrorated with black; subbasal line slight, black, curved, from costa to vein 1, a blackish mark below it on inner margin; antemedial line slight, black, irregularly waved; the inner medial area black-brown; a small blackish annulus with white centre in middle of cell; an indistinct double sinuous blackish medial line; reniform slightly defined on inner side by blackish and on outer by white and black, connected with the costa by a white bar; postmedial line black, bent outwards below costa, then dentate, at vein 3 retracted to lower angle of cell, and excurved below submedian fold, some

whitish points beyond it on costa; postmedial area suffused with black-brown except beyond lower angle of cell; subterminal line black, rather diffused on inner side, angled outwards below veins 7 and 4, then incurved, a black spot in the angle below vein 4; a series of minute **U**-shaped black marks defined on inner side by white before termen, connected by short black streaks with the waved black terminal line; a whitish patch on termen and cilia at discal fold. Hind wing black-brown with the costal area and inner margin rather paler to the subterminal line, the terminal area white, tinged except at middle, with red-brown and irrorated with dark brown; traces of a dark postmedial line; subterminal line slightly angled outwards at discal and submedian folds; a series of small **V**-shaped black marks before termen connected by short streaks with the fine waved black terminal line; the underside grey-white irrorated with brown, a small discoidal lunule defined by brown placed on a sinuous medial line, a postmedial line excurved below costa, and broad subterminal shade.

Hab. Peru, Chanchamayo, 1 ♀ type. *Exp.* 52 millim.

7993. Safia bidens.

Xylis bidens, Kaye, Trans. Ent. Soc. 1901, p. 124, pl. v. f. 1.

♀. Head and thorax red-brown mixed with dark brown and some grey; palpi blackish, the 3rd joint whitish at base and extremity; pectus and legs grey-brown, the tarsi black ringed with white; abdomen grey mixed with blackish. Fore wing ochreous white irrorated and suffused with red-brown; subbasal line blackish, sinuous, from costa to submedian fold; antemedial line black, minutely waved to submedian fold, then incurved; median area below the cell suffused with purple from just beyond the antemedial line; two indistinct sinuous dark medial lines; a small dark spot in middle of cell; reniform faintly defined by blackish, with whitish bar on outer edge and white points at lower extremities; a dark patch on costa defined on inner side and below by whitish before the postmedial line, which is blackish, minutely dentate to vein 3, then retracted to origin of vein 2, then excurved and very minutely dentate; postmedial area black-brown with purple suffusion beyond the postmedial line, some white irroration towards costa and some white points on costa; subterminal line ochreous whitish, sinuous, angled outwards below veins 7 and 4 and slightly below vein 3, angled inwards at veins 5 and 2; a series of minute black lunules with ochreous white spots on their inner sides before termen; a waved dark terminal line and fine pale line at base of cilia. Hind wing ochreous white irrorated with red-brown and suffused with dark brown to the subterminal line; traces of a double sinuous dark medial line and of a single postmedial line; subterminal line dark defined on outer side by ochreous white, slightly waved; a series of black striæ defined on inner side by whitish before termen with which they are connected

by short black streaks; a waved dark terminal line and whitish line at base of cilia; the underside grey suffused with brown, a slight discoidal lunule, rather diffused medial and postmedial lines, and broad subterminal shade with minute white and blackish lunules on its outer edge.

Hab. Trinidad (*Kaye*), 1 ♀ type. *Exp.* 48 millim.

*7994. Safia subvaria. (Plate CCXXVIII. fig. 9.)

Cænipeta subvaria, Schaus, Pr. U.S. Nat. Mus. xxx. p. 119 (1906).

♂. Head and tegulæ fuscous brown, frons with white lines at sides; vertex of head defined in front and at sides by a fine white line; thorax red-brown, the outer edge of patagia and metathorax blackish; pectus and legs blackish, the tibiæ and tarsi ringed with ochreous; abdomen black-brown with slight whitish segmental lines and ochreous spot on anal tuft above. Fore wing rufous, the base of inner area, the antemedial area except just below the cell, the outer half of medial area below the cell, the postmedial area and middle of terminal area suffused with black-brown; subbasal line blackish defined on outer side by whitish, waved, from costa to submedian fold; antemedial line blackish, defined on inner side by whitish and minutely waved from costa to median nervure, then defined on outer side by whitish and slightly angled inwards at vein 1; medial line blackish, almost obsolete except below the cell and with whitish point at costa with blackish before and beyond it, oblique, sinuous; a whitish discoidal patch with two slight black spots on it connected with the costa by a whitish bar; postmedial line black with white striga at costa, obliquely curved to vein 6, incurved at discal fold, below vein 3 bent inwards to lower angle of cell, then oblique and sinuous; some white points with black streaks between them beyond it on costa; subterminal line pale defined on inner side by black below vein 6, dentate, incurved at discal fold and below vein 3, a series of black striæ beyond it and a fine waved line just before termen; cilia black with some rufous above middle and tornus and a fine whitish line at base. Hind wing fuscous brown; traces of an oblique line from lower angle of cell to inner margin, a waved postmedial line defined on outer side by whitish and ending on termen at vein 1; a similar subterminal line; a series of black spots just before termen defined on inner side by whitish striæ; the underside with the basal area irrorated with grey, a blackish discoidal lunule with pure white spots before and beyond it, the double waved medial line arising beyond it at vein 6, the postmedial and subterminal lines more distinctly defined, the blackish marks before termen indistinct with a triangular pure white spot before the mark below vein 7 and lunules before the marks below veins 6, 5, 3.

Hab. Fr. Guiana, St. Laurent Maroni (*Schaus*), type † ♂ in U.S. Nat. Mus. *Exp.* 40 millim.

*7995. Safia nigrescens. (Plate CCXXVIII. fig. 10.)

Barydia nigrescens, Schaus, Proc. Ent. Soc. Wash. xiv. p. 213 (1912).

♂. Head and thorax red-brown mixed with whitish; tarsi ringed with whitish; abdomen grey suffused with reddish brown. Fore wing white suffused with red-brown and irrorated with dark brown, the terminal area dark brown with a greyish tinge; a dark subbasal line, angled outwards below costa and ending at submedian fold; antemedial line very indistinct, dark brown, dentate; a small black spot in middle of cell; reniform brown with indistinct dark outline, narrowing above, some white on its outer edge, and a point before it on median nervure, two brown bars above it from costa; a postmedial brown spot on costa defined by white, the indistinct postmedial brown line obscurely defined on each side by white arising from it, minutely waved, somewhat incurved at discal fold, at vein 3 retracted to below end of cell, then oblique to inner margin; subterminal line slight, black, faintly defined on each side by reddish brown, oblique and sinuous to below vein 7 where it is strongly angled outwards, incurved at discal fold, excurved at middle, then incurved and sinuous; a series of black striæ before termen defined on outer side by white. Hind wing grey-brown, the terminal area fuscous brown; some black-brown and white bars across terminal half of vein 1; traces of an oblique waved postmedial line with slight whitish marks on its inner side on the veins of inner half, ending at tornus; traces of a waved subterminal line, ending on termen at submedian fold towards which it is faintly defined on outer side by whitish; a crenulate dark terminal line with slight whitish marks beyond it on termen; cilia chequered brown and whitish; the underside irrorated with whitish, two curved brown postmedial lines and a dark subterminal shade.

Hab. Fr. Guiana, St. Jean Maroni (*Schaus*), type † ♂ in U.S. Nat. Mus. *Exp.* 56 millim.

7996. Safia irresoluta. (Plate CCXXVIII. fig. 11.)

Rhubuna irresoluta, Wlk. xv. 1821 (1858).

♂. Head, thorax, and abdomen rufous mixed with dark brown and some grey; palpi black-brown irrorated with white; pectus, legs, and ventral surface of abdomen dark brown mixed with grey, the tarsi black ringed with white. Fore wing red-brown suffused and irrorated with dark brown, the outer half of medial area, the postmedial area except towards costa and the terminal area paler; subbasal line slight, blackish, sinuous, from costa to submedian fold; antemedial line blackish, sinuous, excurved at submedian fold; a double sinuous blackish medial line; reniform brownish white faintly defined by blackish, its centre defined by some dark scales, two ochreous bars above it from costa; postmedial line with

ochreous bar from costa, then black, waved, at vein 3 retracted to lower angle of cell, then again excurved, some whitish points beyond it on costa; subterminal line blackish, incurved below costa, incurved and sinuous below vein 6, and with a dark shade beyond it below vein 4; a series of minute blackish striæ faintly defined on inner side by ochreous before termen, with slight dark streaks from them towards termen. Hind wing red-brown suffused with darker brown except on apical area; a slight sinuous dark postmedial line, obsolescent on costal area; subterminal line blackish, obsolescent on costal area, somewhat incurved between discal and submedian folds, excurved at vein 1 where there is a prominent black spot on it with minute white streak towards its outer edge; a series of slight brown striæ faintly defined on inner side by ochreous before termen with slight dark streaks from them towards termen; the underside brown irrorated with white.

♀. Fore wing suffused with dark brown to the subterminal line, the reniform pure white.

Hab. Jamaica (*Martin*), 1 ♀; Haiti (*Tweedie*), 2 ♂, 1 ♀ type. *Exp.* 48–52 millim.

7997. **Safia meroleuca**, n. sp. (Plate CCXXVIII. fig. 12.)

♀. Head and thorax white mixed with some reddish brown; antennæ brown; palpi blackish irrorated with white; sides of frons blackish; pectus and legs white mixed with brown, the tarsi fuscous ringed with white; abdomen grey-brown, the base white. Fore wing white slightly irrorated with brown, the terminal area suffused with pale brown from costa at subterminal line to middle of inner margin; the basal part of costa blackish brown interrupted by white marks at the lines; subbasal line slight, black, angled outwards below costa and ending at submedian fold; antemedial line very indistinct, dark, excurved below the cell, then sinuous; a triangular black-brown patch at middle of costa, the indistinctly double dark medial line arising from it, oblique and slightly sinuous below the cell; reniform with very indistinct white annulus; a triangular black-brown postmedial patch on costa, the slight blackish postmedial line arising from it, excurved below vein 7 and between veins 5 and 3, then oblique and somewhat dentate, a greyish fuscous shade beyond it from vein 7 to inner margin; the costa towards apex with alternating black and white streaks; subterminal line very indistinct, dark defined on outer side by white, waved, angled outwards below vein 4; a series of blackish striæ defined on inner side by white before termen; a slight waved dark terminal line; cilia white at veins 5 and 2. Hind wing white suffused with pale reddish brown except at base; an indistinct double dark medial line; postmedial line slight, brown, sinuous and minutely waved; subterminal line blackish, sinuous and minutely waved, a greyish fuscous shade before it; a series of blackish striæ before termen defined on inner side by

white above and below vein 5 and at submedian fold, a slight waved dark terminal line; the underside grey suffused with brown, sinuous dark medial and postmedial lines and a black-brown subterminal shade.

Hab. Peru, Chanchamayo, 1 ♀ type. *Exp.* 56 millim.

*7998. Safia picturata. (Plate CCXXVIII. fig. 13.)

Safia picturata, Schaus, A. M. N. H. (7) viii. p. 47 (1901).

♂. Head and thorax red-brown mixed with some greyish, the tips of patagia and metathoracic crest fuscous; palpi irrorated with dark brown; tarsi black ringed with ochreous; abdomen red-brown with ridges of black and greyish hair on two basal segments and the slight crests on 4th and 5th segments blackish. Fore wing red-brown mixed with ochreous, the basal area deeper red-brown irrorated with whitish; a curved whitish subbasal striga from costa; antemedial line whitish, sinuous, inwardly oblique with a narrow oblique ochreous band beyond it; an indistinct ochreous medial line, slightly angled outwards below costa, then sinuous; reniform faintly defined by four brownish points; postmedial line very indistinct, brown, faintly defined on outer side by whitish and with some ochreous suffusion before it, oblique to below vein 7, then inwardly oblique and minutely waved, a triangular chocolate-brown patch beyond it on costa with some whitish on it; subterminal line indistinct, pale, bent outwards at vein 7, then waved and with crimson-red suffusion before it to vein 2, then ochreous and straight; some blackish points with ochreous between them on costa towards apex; a series of slight blackish points just before termen and a fine waved dark terminal line. Hind wing brown; a faint oblique waved postmedial line; a slight pale waved subterminal line with crimson-red suffusion before it and silvery blue scales on it and on the veins beyond it from vein 5 to tornus; a series of slight dark striæ just before termen, a fine waved dark terminal line and fine ochreous line at base of cilia; the underside ochreous striated with dark brown, a dark discoidal lunule on a faint waved medial line, a postmedial line excurved and waved to vein 5 then incurved to above tornus, and a diffused curved subterminal shade.

Hab. Brazil, Petropolis, type † ♂ in U.S. Nat. Mus. *Exp.* 44 millim.

*7999. Safia divaricata. (Plate CCXXVIII. fig. 14.)

Homoptera divaricata, Schaus, A. M. N. H. (7) viii. p. 41 (1901).

♂. Head and thorax red-brown mixed with some ochreous and black, the tegulæ tipped with ochreous, the patagia with sinuous black line at middle and greyish tips; tarsi ringed with ochreous; abdomen red-brown mixed with ochreous and with blackish

segmental lines, the crests tipped with blackish and grey. Fore wing reddish brown mixed with ochreous and black, the subterminal area suffused with purple except towards apex; subbasal line black defined on each side by ochreous, slightly angled outwards below costa and ending at submedian fold; antemedial line black defined on each side by ochreous, the ochreous lines diverging slightly at costa, bent inwards to inner margin; claviform a blackish semicircular mark; orbicular a small black spot with indistinct black annulus; reniform very large, defined by ochreous, angled inwards on median nervure to below the orbicular; medial line very indistinct, pale, bent outwards to the reniform and angled inwards at vein 1; postmedial line black defined on each side by ochreous, the ochreous lines diverging widely at costa, bent outwards below costa, oblique and sinuous to vein 3, then incurved to lower edge of reniform; some ochreous points on costa towards apex and streaks on veins 8, 7; subterminal line represented by an oblique ochreous streak from costa to vein 7, then by a black line slightly angled outwards below vein 4, then incurved; a series of black and ochreous striæ before termen, a fine crenulate black terminal line and ochreous line at base of cilia. Hind wing grey-brown with some ochreous on postmedial area and a purplish gloss on subterminal area except towards apex; some black and ochreous irroration along vein 1 except towards base; postmedial line blackish defined on each side by ochreous, sinuous, from vein 5 to termen at vein 1; a waved blackish subterminal line defined by ochreous; a series of black and ochreous striæ before termen; a crenulate black terminal line and ochreous line at base of cilia; the underside ochreous thickly irrorated with red-brown and blackish, a black discoidal bar, traces of two medial lines, postmedial line black, waved towards costa and incurved from vein 5 to termen at vein 1, a subterminal ochreous lunule defined by brownish in submedian interspace.

Hab. Brazil, São Paulo (*D. Jones*), type † ♂ in U.S. Nat. Mus. *Exp.* 54 millim.

*8000. **Safia eminens.** (Plate CCXXVIII. fig. 15.)

Safia eminens, Schaus, A. M. N. H. (7) viii. p. 46 (1901).

♂. Head and thorax red-brown mixed with ochreous; tarsi fuscous ringed with whitish; abdomen red-brown slightly mixed with ochreous. Fore wing reddish brown mixed with ochreous; subbasal line defined on outer side by ochreous, minutely dentate, from costa to submedian fold; antemedial line blackish defined on each side by ochreous, angled inwards below costa and at vein 1 and outwards in submedium fold; an indistinct blackish spot in middle of cell and two small discoidal spots; medial line blackish, excurved in cell, then sinuous; an oblique somewhat dentate line beyond the cell from costa to vein 5 below which there is a minute whitish spot; a triangular whitish postmedial mark with dark centre

from costa to below vein 7, the blackish postmedial line defined on outer side by ochreous and on both sides on inner area arising from its apex, waved, bent inwards below vein 4 and angled outwards in submedian fold; subterminal line ochreous white with a blackish patch on its inner side below vein 7 and small spots below veins 6 and 4, dentate; a series of ochreous white and blackish striæ just before termen and a fine waved dark terminal line. Hind wing reddish brown mixed with ochreous; a slight oblique ochreous antemedial line and discoidal lunule; postmedial line slight, dark defined on outer side by ochreous, minutely waved; subterminal line indistinct, dark defined on outer side by ochreous and with blackish spot before it below wein 4, waved; a series of black and ochreous striæ just before termen; a fine waved blackish terminal line; the underside fuscous brown striated with ochreous; a faint ochreous antemedial line and discoidal lunule, postmedial line brown, excurved below costa, subterminal line diffused.

Hab. Venezuela, Arca, type † ♂ in U.S. Nat. Mus. *Exp.* 50 millim.

8001. Safia cades.

Selenis cades, Druce, A. M. N. H. (7) ii. p. 226 (1898); id. Biol. Centr.-Am., Het. ii. p. 521, pl. 97. f. 18.

Head, thorax, and abdomen dark brown mixed with some red-brown and greyish; palpi pale in front; pectus, legs, and ventral surface of abdomen whitish mixed with brown, the tarsi blackish ringed with white. Fore wing dark brown tinged with grey and slightly irrorated with blackish; subbasal line slight, black, sinuous, from costa to submedian fold; antemedial line black, waved, a double sinuous blackish medial line; a small blackish spot in middle of cell; reniform slightly defined by blackish, its outer edge with small white spot at middle, white point above and two at lower extremity; a dark spot on costa defined by whitish before the postmedial line, which is black, waved, incurved below vein 4 and excurved below submedian fold, some whitish points beyond it on costa; subterminal line black, oblique, waved, defined on outer side by a narrow whitish band; a series of black striæ before termen slightly defined on inner side by whitish; a waved blackish terminal line and fine pale line at base of cilia. Hind wing brown irrorated with grey and blackish; traces of a double sinuous dark medial line; an indistinct double sinuous dark postmedial line; subterminal line indistinct, double, dark, minutely waved, defined on outer side by a narrow whitish band; a series of minute black spots before termen, a waved blackish terminal line, and fine pale line at base of cilia; the underside greyish thickly irrorated with brown, two sinuous dark medial lines, a sinuous postmedial line, and a subterminal shade.

Hab. Guatemala, Volcan de Atitlan (*Champion*), 1 ♂, 1 ♀ type, Godman-Salvin Coll. *Exp.* ♂ 44, ♀ 50 millm.

8002. **Safia nyctichroa**, n. sp. (Plate CCXXVIII. fig. 16.)

Homoptera decessa, Druce, Biol. Centr.-Am., Het. i. p. 345 (part.), nec Wlk.

♀. Head, thorax, and abdomen red-brown mixed with some grey, the vertex of head whitish; palpi, pectus, legs, and ventral surface of abdomen grey mixed with dark brown, the tarsi blackish ringed with white. Fore wing red-brown tinged with dark brown and slightly irrorated with blackish; subbasal line black defined on outer side by grey, curved from costa to submedian fold; antemedial line black, waved; two waved black medial lines; reniform defined on inner side by black, a small white spot on its outer edge, a white point at upper extremity and two at lower extremity; a dark patch on postmedial part of costa defined by whitish tinged with red-brown; postmedial line black, arising at vein 7, oblique, sinuous, incurved between vein 3 and submedian fold, some whitish points beyond it on costa; subterminal line black, oblique, slightly waved; a series of black striæ before termen connected by short streaks with the waved black terminal line. Hind wing red-brown suffused with dark brown; a double sinuous dark medial line; postmedial line double, blackish, minutely waved; subterminal line black, slightly angled outwards at discal fold, a slight pale line beyond it from vein 4 to tornus; a series of minute black spots before termen and a fine waved black terminal line; the underside whitish thickly irrorated with brown, a dark discoidal lunule, minutely waved medial line excurved beyond the cell, minutely waved postmedial line ending at tornus, and broad dark subterminal shade with series of dark points beyond it.

Hab. Panama, Chiriqui (*Champion*), 1 ♀ type, Godman-Salvin Coll. *Exp.* 44 millim.

*8003. **Safia noctar.** (Plate CCXXVIII. fig. 17.)

Yrias noctar, Schaus, A. M. N. H. (7) viii. p. 49 (1901.)

♀. Head, thorax, and abdomen dark brown with some grey mixed; fore and mid tibiæ and the tarsi black-brown ringed with white. Fore wing fuscous brown irrorated with grey; two whitish subbasal points on costa; antemedial line with two whitish points on costa, then very indistinct, double, dark, waved, excurved; a small whitish spot at upper angle of cell and more prominent spot at lower angle; postmedial line with double whitish striæ from costa, slightly bent outwards below costa, then represented by a series of white points on the veins, incurved below vein 4, some small whitish spots beyond it on costa; subterminal line represented by a series of slight ochreous white spots, slightly excurved below vein 7 and at middle; a terminal series of white and black points; cilia with fine whitish lines at base and middle. Hind wing fuscous brown slightly irrorated with grey; traces of a double dark medial line; traces of a minutely dentate dark postmedial line from vein 6 to inner margin with white points at the veins; traces of a waved subterminal line with whitish marks on it below vein 5 and at submedian fold;

a terminal series of whitish points and fine waved line at base of cilia; the underside grey tinged and thickly irrorated with brown, an indistinct brown discoidal annulus with faint line from it to inner margin, an indistinct postmedial line, and faint diffused subterminal line.

Hab. Mexico, Vera Cruz, Paso San Juan (*Schaus*), type † ♀ in U.S. Nat. Mus. *Exp.* 42 millim.

8004. **Safia minax.** (Plate CCXXVIII. fig. 18.)

Coxina minax, Guen. Noct. ii. p. 298 (1852); Druce, Biol. Centr.-Am., Het. i. p. 341.

♀. Head, thorax, and abdomen dark brown mixed with grey, the last with small white spot at middle of dorsum; palpi and legs black-brown mixed with grey, the tarsi ringed with whitish. Fore wing dark brown irrorated with grey and black and tinged in parts with reddish; double black subbasal striæ from costa; antemedial line double, blackish, diffused, waved; an indistinct waved dark medial line; reniform defined on inner side by white points above and below and on outer by a white striga expanding into a small spot at its lower extremity; postmedial line black, defined on each side by whitish at costa, bent outwards below costa, then slightly sinuous, incurved at discal fold and below vein 4, an indistinct maculate dark line beyond it and some white points on costa; subterminal line slight, whitish, somewhat sinuous, excurved below vein 7; a series of slight black points before termen and a waved blackish terminal line interrupted by white points at the interspaces; a fine pale line at base of cilia. Hind wing brown; a faint dark minutely waved postmedial line from vein 4 to tornus, slightly defined on outer side by grey, and a similar subterminal line ending on termen at vein 1; a waved blackish terminal line and whitish line at base of cilia; the underside grey-white irrorated with brown, a small dark discoidal spot with pale centre, traces of a sinuous medial line, a minutely waved postmedial line, faint waved subterminal line, and terminal series of black points.

Hab. Mexico, Jalapa (*Schaus*), 1 ♀, Yucatan. *Exp.* 36 millim.

Genus **ZALE.**

	Type.
Zale, Hübn. Verz. p. 274 (1827)	*horrida.*
Phœocyma, Hübn. Verz. p. 275 (1827)	*lunata.*
Omopterus, Boisd. Guer. Icon. Règ. Anim. p. 522 (1829), non descr.	*lunata.*
Xylis, Guen. Noct. iii. p. 7 (1852)	*setipes.*
Homoptera, Guen. Noct. iii. p. 8 (1852)	*lunata.*
Ypsia, Guen. Noct. iii. p. 16 (1852)	*æruginosa.*
Anthracia, Guen. Noct. iii. p. 18 (1852); nec Hübn.	*coracias.*
Pseudanthracia, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 46 (1874)	*coracias.*
Nephelina, Kirby, Allen's Nat. Libr. v. p. 130 (1897)	*edusa.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and rather broadly scaled, the 3rd long; frons smooth, with

tuft of hair above; eyes large, round; antennæ of male with fasciculate cilia; thorax clothed with scales and hair mixed, the pro- and metathorax with spreading crests, the patagia very broadly dilated with scales at extremity; tibiæ moderately fringed with hair, the fore and hind tibiæ not spined, the latter rarely with one or two spines between the mid and terminal spurs; abdomen with very large dorsal crest at base followed by a series of small crests. Fore wing with the apex rounded, the termen evenly curved and highly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Femora of male fringed with long hair, the mid femora dilated with a groove containing tufts of large scales and hair.

A. Hind tibiæ of male fringed with long hair; hind wing with the termen somewhat excurved at middle, the costa lobed near base.

a. Fore wing of male with the termen somewhat excised from vein 4 to tornus.

8005. Zale discisigna.

Homoptera discisigna, Wlk. xiii. 1066 (1857); Druce, Biol. Centr.-Am., Het. i. p. 345.
Xylis ustipennis, Druce, Biol. Centr.-Am., Het. i. p. 342 (part.), nec Wlk.
Homoptera æmona, Druce, Biol. Centr.-Am., Het. i. p. 344 (part.).

Head, thorax, and abdomen light red-brown mixed with some dark brown; palpi dark brown with pale band at base of 3rd joint;

Fig. 54.—*Zale discisigna*, ♂. ½.

pectus whitish tinged with rufous; tarsi fuscous ringed with white; ventral surface of abdomen ochreous white tinged with brown on

terminal half. Fore wing rufous suffused with red-brown and some fuscous and slightly irrorated with blackish, the costal area darker, the inner antemedial area and the terminal area above and below middle reddish ochreous; an indistinct double sinuous subbasal line from costa to submedian fold; antemedial line indistinct, double, sinuous, inwardly oblique; an indistinct treble oblique sinuous medial line; a small black spot in middle of cell; reniform faintly defined by blackish and whitish striæ, narrow; postmedial line blackish, slightly bent outwards below costa, then waved, incurved at discal fold and oblique below vein 4, a slight dark shade beyond it; a faint pale waved subterminal line slightly defined by brown and on outer side by whitish spots below veins 7, 4 and 2, a dark fascia beyond it on vein 4; a series of small dark spots before termen from apex to vein 4, then a series of striæ. Hind wing rufous suffused with red-brown and slightly irrorated with black; an indistinct slightly waved antemedial line and two lines beyond the cell; postmedial line double, black, waved, arising at vein 6, a leaden fuscous patch beyond it at middle with streak on vein 4 to termen; a series of small dark spots before termen; the underside ochreous with discoidal lunule defined by brown, two sinuous postmedial lines and subterminal shade.

Ab. 1. Hind wing with white patch instead of fuscous beyond the postmedial line.

Hab. Mexico, Cuesta de Misantla (*Trujillo*), 1 ♀; Honduras (*Dyson*), 1 ♀ type; Guatemala, Zapote (*Champion*), 1 ♂, 1 ♀, Volcan de Atitlan (*Champion*), 1 ♀; Costa Rica, Candelaria Mts. (*Underwood*), 1 ♀; Panama, Chiriqui (*Ribbé*), 1 ♂, Godman-Salvin Coll. *Exp.* 52–58 millim.

b. (*Xylis.*) Fore wing of male with the termen evenly curved.

8006. Zale setipes.

Xylis setipes, Guen. Noct. iii. p. 7, pl. 15. f. 6 (1852); Druce, Biol. Centr.-Am., Het. i. p. 341.
Homoptera peruncta, Guen. Noct. iii. p. 9 (1852).
Homoptera ustipennis, Wlk. xiii. 1071 (1857); Druce, Biol. Centr.-Am., Het. i. p. 342.
Letis incipiens, Wlk. xiv. 1266 (1858).
Homoptera æmona, Druce, Biol. Centr.-Am., Het. i. p. 344, pl. 31. f. 3 (1889).

♂. Head and thorax fuscous brown with a slight greyish tinge; palpi with whitish rings at base and extremity of 3rd joint; pectus and hind legs brownish grey, the tarsi black ringed with white; abdomen fuscous brown with an ochreous brown dorsal patch on 2nd segment, the ventral surface greyer. Fore wing fuscous brown with a greyish tinge, the inner antemedial and terminal areas ochreous tinged with red-brown; subbasal line blackish, sinuous, from costa to submedian fold; antemedial line blackish, double at costa, sinuous to median nervure, then inwardly oblique; a black point in middle of cell; reniform defined by blackish and with some white

points on its outer edge; an oblique double waved blackish medial line; postmedial line indistinctly double, blackish, waved, bent inwards and forming a spot at discal fold, very oblique below vein 4, some pale points beyond it on costa; subterminal line indistinct, dark sinuous; a series of black striæ before termen defined on outer side by ochreous white. Hind wing reddish ochreous suffused with brown, the terminal area fuscous tinged with leaden grey from vein 4 to tornus; indistinct double waved antemedial and medial lines;

Fig. 55.—*Zale setipes*, ♂. ¼.

postmedial line double, black, waved; a series of black striæ defined on outer side by ochreous white before termen; a fine pale line at base of cilia; the underside whitish irrorated with brown, the terminal area suffused with brown, a discoidal spot defined by brown with slight line from it to inner margin, curved minutely waved medial and postmedial lines, a subterminal shade, and series of black striæ defined on outer side by white before termen.

♀. Hind wing browner, the postmedial line with sinuous bluish white patch beyond it at middle with two small ochreous white spots between it and tornus.

Ab. 1. ♀. Hind wing with the outer postmedial line much stronger from vein 6 to inner margin, incurved between discal and submedian folds, and with the bluish white patch beyond it reduced to a few scales.

Hab. Mexico, Jalapa (*Trujillo*), 2 ♂, 3 ♀; Panama, Chiriqui (*Champion*), 1 ♂, 2 ♀ type *æmona*, Godman-Salvin Coll.; Haiti (*Tweedie*), 1 ♂ type *incipiens*; Sta. Lucia (*Rotheram*), 1 ♂; Grenada (*H. H. Smith*), 2 ♂, 2 ♀; Colombia, Sta. Marta (*Bouchard*), 1 ♂; Brazil, Theresopolis (*Michaelis*), 1 ♂; Paraguay, Sapucay (*Foster*), 1 ♂; Hab. ign., 1 ♂ type *ustipennis*, type † ♀ *peruncta* in Mus. Paris. *Exp.* 44–52 millim.

B. (*Phœocyma.*) Hind tibiæ of male not fringed with long hair; hind wing with the termen evenly curved, the costa not lobed at base.
  a. Fore wing with the postmedial line single, dentate above and below vein 4.
    a^1. Hind wing with the subterminal line incurved at middle.
      a^2. Fore wing with the subterminal line not defined on outer side by golden green.
        a^3. Fore wing of male white with faint brown striation, of female with prominent brown striation ..... *exhausta.*
        b^3. Fore wing of male prominently striated with dark brown, of female suffused with dark brown ..... *pachystrigata.*
      b^2. Fore wing with the subterminal line defined on outer side by golden green ..... *galactea.*
    b^1. Hind wing with the subterminal line slightly bent inwards and waved between discal and submedian folds but not curved.
      a^2. Fore wing with the subterminal line defined on outer side by golden green ..... *viridans.*
      b^2. Fore wing with the subterminal line not defined on outer side by golden green.
        a^3. Fore wing with the ground-colour red-brown . *fictilis.*
        b^3. Fore wing with the ground-colour grey-brown . *terrosa.*
  b. Fore wing with the postmedial line single, angled outwards at veins 4 and 3..... *grata.*
  c. Fore wing with the postmedial line indistinctly double, excurved above and below vein 4.
    a^1. Fore wing with grey-green suffusion on ante- and postmedial areas.
      a^2. Wings grey thickly irrorated and striated with dark brown ..... *sabena.*
      b^2. Wings red-brown not irrorated and striated with dark brown ..... *configurata.*
    b^1. Fore wing without grey-green suffusion on ante- and postmedial areas.
      a^2. Wings almost entirely suffused with leaden fuscous ..... *fuliginosa.*
      b^2. Wings not almost entirely suffused with leaden fuscous.
        a^3. Wings with the ground-colour bright rufous.
          a^4. Fore wing with the tornal area mostly suffused with leaden fuscous ..... *rufosa.*
          b^4. Fore wing with the tornal area not suffused with leaden fuscous ..... *sexplagiata.*
        b^3. Wings with the ground-colour red-brown to greyish brown.
          a^4. Fore wing with the inner postmedial line black and distinctly sinuous below vein 4.
            a^5. Wings with the ground-colour pale with prominent dark irroration and striation.
              a^6. Size smaller; wings paler and less distinctly marked ..... *salicis.*
              b^6. Size rather larger; wings darker and more distinctly variegated ..... *lunata.*
            b^5. Wings much more even dark red-brown without prominent irroration or striation. *rhigodora.*

b^4. Fore wing with the inner postmedial line brown and very slightly sinuous below vein 4 ..... *phæograpta.*
c^4. Fore wing with the postmedial line brown, indistinct, and waved below vein 4.
a^5. Hind wing with the subterminal line black ..... *unilineata.*
b^5. Hind wing with the subterminal line pale, defined on each side by brown ..... *declarans.*
c^3. Wings with the ground-colour white ..... *albidula.*
d. Fore wing with the postmedial line excurved at vein 4.
a^1. Fore wing with the antemedial line double and not acutely angled outwards below costa.
a^2. Wings grey-white with hardly any brown suffusion..... ..... *galbanata.*
b^2. Wings grey suffused with fuscous brown..... *edusina.*
c^2. Wings black-brown suffused with leaden grey.
a^3. Fore wing with grey-green irroration beyond the antemedial line ..... *æruginosa.*
b^3. Fore wing without grey-green irroration beyond the antemedial line.
a^4. Fore wing with more or less distinct pale mark on subterminal line at discal fold..... *undularis.*
b^4. Fore wing without pale mark on subterminal line at discal fold.
a^5. Wings without terminal series of white points ..... *corvus.*
b^5. Wings with terminal series of white points ..... *coracias.*
d^2. Wings red-brown or more or less suffused with red-brown.
a^3. Fore wing with white points on outer edge of reniform.
a^4. Wings red-brown without any grey..... *janisca.*
b^4. Wings variegated with grey ..... *insuda.*
b^3. Fore wing without white points on outer edge of reniform.
a^4. Both wings with the subterminal line double.
a^5. Fore wing ochreous or red-brown more or less suffused with blackish ..... *minerea.*
b^5. Fore wing grey suffused with red-brown.
a^6. Wings with green suffusion beyond the subterminal line ..... *excellens.*
b^6. Wings without green suffusion beyond the subterminal line ..... *lunifera.*
b^4. Both wings with the subterminal line single, strong, black ..... *penna.*
b^1. Fore wing with the antemedial line single, diffused on outer side and not angled outwards below costa ..... *australis.*
c^1. Fore wing with the antemedial line single and acutely angled outwards below costa.
a^2. Fore wing with the subbasal and antemedial lines strong and black.
a^3. Fore wing with the basal half of medial area pale and contrasting..... *benesignata.*
b^3. Fore wing with the basal half of medial area concolorous.
a^4. Fore wing nearly uniform red-brown.
a^5. Hind wing with the subterminal line defined on inner side by a rufous band ... *metata.*

b^5. Hind wing with the subterminal line not defined on inner side by a rufous band ... *curema.*
b^4. Fore wing grey suffused with red-brown.
a^5. Fore wing of male with the terminal area irrorated with white and with white spot above tornus ..... *duplicata.*
b^5. Fore wing of male with the terminal area not irrorated with white and without white spot above tornus ..... *bethunei.*
c^4. Fore wing dark purplish grey with some red-brown in submedian and discal folds only . *squamularis.*
b^2. Fore wing with the subbasal and antemedial lines slight and obsolescent.
a^3. Fore wing with the medial shade distinct ..... *largera.*
b^3. Fore wing with the medial shade indistinct ... *obliqua.*

8007. **Zale exhausta.** (Plate CCXXVIII. fig. 19 ♂, 20 ♀.)

Homoptera exhausta, Guen. Noct. iii. p. 14 (1852).
Homoptera vernifera. Wlk. xv. 1798 (1858).
Homoptera privata, Wlk. xxxiii. 883 (1865).
Homoptera viridans, Druce, Biol. Centr.-Am., Het. i. p. 344 (part.), nec Guen.

♂. Head, tegulæ, and prothorax pale rufous, the rest of thorax grey-white; antennæ brown; tegulæ with black line near base; palpi blackish at sides, the extremities of 2nd and 3rd joints whitish; frons with slight lateral black bars; pectus and legs white tinged with rufous, the tarsi black ringed with whitish; abdomen grey-white tinged with brown except at base, the 2nd segment with small dorsal black spot. Fore wing grey-white faintly striated with brown; the basal area suffused with red-brown; traces of a double sinuous blackish subbasal line from costal to submedian fold; antemedial line double, blackish, inwardly oblique, sinuous; reniform faintly defined by brown and tinged with red-brown, a patch of red-brown suffusion above it on costa; postmedial line black, oblique and sinuous to above vein 6, bent inwards at vein 6, angled outwards above and below vein 4, then oblique and angled outwards in the interspaces, a conical patch of red-brown suffusion beyond it on costal area with some white points on costa; subterminal line indistinctly double, brownish and slightly waved, excurved at middle and with a rather dentate brown mark beyond it on vein 4 extending to termen; a series of slight blackish lunules before termen. Hind wing grey-white faintly striated with brown; a double sinuous black postmedial line filled in with red-brown and with some red-brown beyond it, the inner line arising at vein 7, the outer at discal fold, incurved between vein 5 and submedian fold, a greenish grey patch beyond it between veins 4 and 2; slight terminal blackish marks at submedian fold and tornus; the underside mottled with brown, an indistinct sinuous postmedial line, diffused subterminal line, and series of black points before termen.

♀. Thorax and abdomen tinged with red-brown; wings tinged with red-brown and prominently striated with dark brown; fore wing with the postmedial line filled in with blackish.

Hab. U.S.A., Florida; Mexico, Jalapa (*Trujillo*), 2 ♂; Guatemala (*Rodriguez*), 1 ♂, Volcan de Atitlan (*Champion*), 1 ♀, Godman-Salvin Coll.; Ecuador, 1 ♂; Brazil, Amazons, Pará, 1 ♂ type *vernifera*; Rio Janeiro (*Dohrn*, *Browne*), 2 ♀, Tijuca (*Wagner*), 1 ♂; Paraguay, Sapucay (*Foster*), 5 ♂, 6 ♀. *Exp.* 48–56 millim. Type † ♂ *privata* in Mus. Oxon.

8008. **Zale pachystrigata**, n. sp. (Plate CCXXIX. fig. 1 ♂, 2 ♀.)

Homoptera viridisquama, Druce, Biol. Centr.-Am., Het. i. p. 344 (part.), nec Wlk.

Homoptera edusa, Druce, Biol. Centr.-Am., Het. i. p. 342 (part.), nec Drury.

♂. Head and thorax pale grey mixed with brown and some pale rufous; tegulæ with black line near base; pectus pale rufous; fore and mid tarsi black ringed with white; abdomen grey tinged with rufous and irrorated with brown. Fore wing grey-white tinged in parts with rufous and striated with brown; antemedial line double, blackish filled in with rufous, angled outwards below costa, then oblique and sinuous to inner margin near base; reniform very indistinctly defined, with some rufous before it and above it on costa; postmedial line black, oblique and waved to above vein 6, then bent inwards, angled outwards above and below vein 4, then oblique and angled outwards in the interspaces, a small brown spot on its outer side below vein 2; a conical red-brown patch beyond it on costal area; a narrow incurved dark brown band from termen at vein 4 to inner margin before tornus with a faint greenish grey tinge on its outer side; a series of small red-brown spots before termen; a fine pale line at base of cilia. Hind wing grey-white faintly tinged with rufous and striated with brown; the median nervure and vein 1 slightly streaked with grey-green and irrorated with black scales; the antemedial area with traces of three double waved lines, the postmedial area with two similar lines; postmedial line double, black, minutely waved, incurved between discal and submedian folds, followed by a diffused sinuous grey-green band; a series of slight red-brown spots before termen; cilia with a fine pale line at base. Underside grey tinged and striated with brown, a slight postmedial line and subterminal shade.

♀. Head, thorax, and abdomen with dark brown mixed; wings almost entirely suffused with dark brown and striated with black, the terminal area paler except towards costa.

Hab. Mexico, Jalapa (*Trujillo*), 1 ♂ type, Mexico City (*Hoege*), 1 ♀; Guatemala, Cerro Zunil (*Champion*), 1 ♀, Godman-Salvin Coll. *Exp.* 48–58 millim.

8009. **Zala galactea**, n. sp. (Plate CCXXIX. fig. 3.)

Homoptera viridans, Druce, Biol. Centr.-Am., Het. i. p. 344 (part.), nec Guen.
Homoptera viridisquama, Druce, Biol. Centr.-Am., Het. i. p. 344 (part.), nec Wlk.

Head, tegulæ, and prothorax rufous, the rest of thorax grey tinged with rufous; antennæ brown; tegulæ with black line near base; frons with black lateral bars; pectus and legs whitish tinged with rufous, the tarsi blackish ringed with white; abdomen whitish tinged with rufous, a small dorsal black spot on 2nd segment and spot at base of anal segment. Fore wing white tinged with rufous and striated with red-brown, the basal area suffused with red-brown with slight greenish suffusion beyond it; traces of a double sinuous subbasal line from costa to submedian fold; antemedial line double, blackish, inwardly oblique and slightly sinuous; a brown point in middle of cell; reniform faintly defined by brown and with some red-brown suffusion above it on costa; postmedial line black, oblique and sinuous to above vein 6, bent inwards at vein 6, angled outwards above and below vein 4, then incurved, angled outwards in the interspaces and with small brown spot on it below vein 2, a conical red-brown patch beyond it on costal area with some whitish points at costa; subterminal line slight, brown, dentate, defined on outer side by grey-green; a faint waved red-brown line before termen. Hind wing creamy whitish faintly striated with red-brown; faint greenish streaks on median nervure and vein 1; postmedial line double, black, sinuous, filled in with red-brown and with some red-brown suffusion beyond it, followed by a diffused greenish band from vein 6 to tornus where there is a small dark spot; the underside mottled with brown, a sinuous postmedial line, diffused subterminal line, and series of black points before termen.

Hab. Mexico, Jalapa (*Trujillo*), 1 ♂ type, Atoyac, Vera Cruz (*Schumann*), 1 ♀; Panama, Chiriqui (*Champion*), 1 ♂, Godman-Salvin Coll. *Exp.* 56–60 millim.

8010. **Zale viridans.** (Plate CCXXIX. fig. 4.)

Phalæna lunata, Cram. Pap. Exot. iv. p. 38, pl. 308. f. C (nec Drury).
Homoptera viridans, Guen. Noct. iii. p. 13 (1852).
Homoptera viridisquama, Wlk. xv. 1797 (1858); Druce, Biol. Centr.-Am., Het. i. p. 344.

Head and thorax red-brown mixed with grey; tegulæ with a black line near base; palpi with the basal joint black, the 2nd and 3rd irrorated with black; frons with lateral black bars; pectus and legs brownish white, the latter irrorated with brown, the fore and mid tarsi blackish ringed with white; abdomen grey-brown with slight blackish segmental lines, the 2nd segment with small dorsal black spot, the ventral surface brownish white. Fore wing ochreous tinged with red-brown and faintly striated with brown; a slight

double oblique sinuous brown subbasal line from costa to submedian fold with some greenish grey beyond it in cell and black striæ on costa; antemedial line double, blackish filled in with red-brown, inwardly oblique and slightly sinuous, some greenish grey suffusion beyond it on inner area and as streaks on subcostal and median nervures; a black point in middle of cell; reniform a diffused ochreous spot defined on inner side by a slight curved black line; postmedial line black, oblique and sinuous to above vein 6, incurved at discal fold, angled outwards above and below vein 4, then oblique and angled outwards in the interspaces, a small brown spot on its outer edge below vein 2; the terminal area more ochreous with a conical red-brown patch on postmedial part of costa with whitish points on the costa; subterminal line brownish defined on outer side by grey-green, angled outwards at vein 4 where there is a small dentate blackish mark from it to termen; a series of small red-brown spots before termen. Hind wing ochreous tinged with red-brown and faintly striated with brown; the median nervure and vein 1 streaked with grey-green; two indistinct waved brown lines beyond the cell; postmedial line double, black filled in with red-brown, the inner line sinuous, the outer slightly waved towards costa and inner margin, incurved between discal and submedian folds, a grey-green band beyond it with some blackish towards apex and tornus; a series of small red-brown spots before termen. Underside of both wings grey mottled and striated with dark brown, an indistinct dark postmedial line and rather diffused subterminal line.

Hab, Mexico, Jalapa (*Trujillo*), 1 ♂, Vera Cruz, Cordova (*Rümeli*), 1 ♀; Guatemala, Zapote (*Champion*), 1 ♀; Costa Rica, Sta. Clara Valley (*Zurcher*), 1 ♂, Candelaria Mts. (*Underwood*), 1 ♂; Panama, Chiriqui (*Champion, Ribbé*), 3 ♀, Godman-Salvin Coll.; Venezuela, 1 ♂; Brazil, Amazons (*Wallace*), 1 ♀ type *viridisquama*, São Paulo (*D. Jones*), 2 ♂; Paraguay, Sapucay (*Foster*), 1 ♀. *Exp.* 48–60 millim.

8011. Zale fictilis. (Plate CCXXIX. fig. 5.)

Homoptera fictilis, Guen. Noct. iii. p. 10 (1852).
Homoptera guadulpensis, Guen. Noct. iii. p. 10 (1852).
Homoptera strigimacula, Guen. Noct. iii. p. 11 (1852).
Homoptera gradata, Wlk. xiii. 1060 (1857).
Homoptera exhausta, Druce, Biol. Centr.-Am., Het. i. p. 343 (nec Guen).
Homoptera viridisquama, Druce, Biol. Centr.-Am., Het. i. p. 344 (part.), nec Wlk.

Head and thorax rufous; tegulæ with black line near base; antennæ brown; fore and mid tarsi black, ringed with white; abdomen pale rufous with slight fuscous bands on two terminal segments, the ventral surface whitish. Fore wing rufous striated with brown; a slight obliquely curved dark subbasal line from costa to vein 1 near base; antemedial line indistinctly double, oblique from cell to inner margin near base; reniform very obscurely defined by red-brown; postmedial line slight, black,

waved to vein 6, then bent inwards and with small dark spot beyond it, angled outwards above and below vein 4, then oblique, sinuous, angled outwards at submedial fold and with small dark spot beyond it below vein 2; subterminal line indistinct, red-brown, slightly waved, angled outwards at vein 4, then obliquely incurved and with narrow brown band beyond it with some greenish scales on it; a faint oblique dark shade from apex and series of small brown spots before termen; cilia with a fine whitish line at base. Hind wing rufous striated with brown; two indistinct waved brown lines beyond the cell; postmedial line double, black filled in with red-brown, arising at vein 6, slightly waved, incurved between vein 5 and submedian fold, a faint incurved brown shade beyond it arising from apex and with white patch on it at middle. Underside of both wings grey striated with dark brown, a faint dark subterminal shade.

Ab. 1. *gradata*, ♀. Fore wing with the costal area tinged with fuscous obliquely from apex to inner margin before middle.

Hab. U.S.A., Florida, Texas; Mexico, Cordova (*Rümeli*), 4 ♂, Cuesta de Misantla (*Trujillo*), 2 ♂, Jalapa (*Trujillo*), 1 ♂; Guatemala (*Rodriguez*), 1 ♂; Panama, Chiriqui (*Champion*), 2 ♂, Godman-Salvin Coll.; Cuba, Santiago (*Schaus*), 2 ♂; Haiti (*Tweedie*), 4 ♂, 2 ♀ type *gradata*; Guadeloupe; Grenada (*H. H. Smith*), 1 ♂; Fr. Guiana; Brazil, type † ♂ *strigimacula* in Mus. Paris, Itaparica (*Meade-Waldo*), 4 ♂, 1 ♀; Argentina (*O. Thomas*), 2 ♂, 2 ♀, Mendoza (*Baine*), 1 ♂. *Exp.* 54–62 millim.

8012. **Zale terrosa.** (Plate CCXXIX. fig. 6.).

Homoptera terrosa, Guen. Noct. iii. p. 11 (1852); Druce, Biol. Centr.-Am., Het. i. p. 343.
Homoptera posterior, Wlk. xiii. 1060 (1857).
Homoptera gradata, Druce, Biol. Centr.-Am., Het. i. p. 343 (nec Wlk.).
Homoptera exhausta, Druce, Biol. Centr.-Am., Het. i. p. 343 (part.), nec Guen.

Head, thorax, and abdomen grey-brown, the last with slight dark segmental lines; palpi irrorated with blackish; fore tarsi blackish with pale rings. Fore wing grey-brown striated with blackish; antemedial line indistinct, double, blackish, sinuous and inwardly oblique; a faint double waved medial line; a blackish point in middle of cell; reniform a narrow lunule slightly defined by brown, with white striæ on its outer edge and white points at lower extremities; postmedial line black, sinuous to discal fold and angled outwards above vein 6, angled outwards above and below vein 4, then oblique and angled outwards below vein 3 and at submedian fold, with a minute brown spot on its outer edge below vein 2, a slight wedge-shaped brown shade beyond it on costal area; subterminal line very indistinct, incurved and with slight dark shade on its outer side below vein 4; a series of small black spots before termen, and fine pale line at base of cilia. Hind wing grey-brown, the basal and terminal areas slightly striated with

brown; three indistinct sinuous brown lines beyond the cell; postmedial line double, black, arising at vein 7, the inner line sinuous, the outer slightly angled outwards at discal fold, then incurved to submedian fold; a series of minute black spots before termen and fine pale line at base of cilia; the underside whitish striated with brown, a slight dark subterminal shade.

Ab. 1. *posterior*. Wings suffused in parts with greyish fuscous.

Hab. Mexico, Jalapa (*Trujillo*, *Hoege*), 5 ♂, 2 ♀, Coatepec (*Brooke*), 1 ♀, Tabasco, Teapa (*H. H. Smith*), 1 ♀, Tamaulipas, Zampico (*Richardson*), 1 ♀; Guatemala, Coatepec (*Champion*), 1 ♂; Nicaragua, Chontales (*Janson*), 1 ♀; Costa Rica, Van Patten, 1 ♂; Panama, Chiriqui (*Champion*), 8 ♂, 5 ♀, Godman-Salvin Coll.; Jamaica (*Gosse*, *Kaye*), 1 ♂, 2 ♀, type *posterior*, Hope (*Kaye*), 1 ♀; St. Vincent, 2 ♀; Dominica, 1 ♂; Grenada (*H. H. Smith*), 1 ♂, 2 ♀; Trinidad, 1 ♂, 1 ♀; Brazil, Amazons, Bréves (*Austen*), 1 ♀, Itaparica (*Meade-Waldo*), 1 ♂, 1 ♀; Paraguay, Sapucay (*Foster*), 3 ♂, 4 ♀; Argentina (*O. Thomas*), 1 ♂. *Exp.* 40–56 millim.

*8013. Zale grata. (Plate CCXXIX. fig. 7.)

Zale grata, Dogu. Het. Nouv. Am. Sud, vi. p. 13 (1912).

♀. Head and thorax rufous with some black-brown scales; 1st and 2nd joints of palpi with some black at sides and whitish in front; tarsi with greyish rings; abdomen dorsally pale rufous with fine blackish segmental lines. Fore wing rufous sparsely irrorated with black-brown, the basal area rather darker, the terminal half paler; subbasal line double, brown, sinuous, from costa to submedian fold, some pale green scales beyond it on subcostal and median nervures; antemedial line treble, brown, waved, rather inwardly oblique; a yellow-green streak on inner margin from it to the subterminal line; a minute black spot in middle of cell; reniform a narrow lunule, yellow-green slightly defined by brown; a treble waved brown medial line, excurved to median nervure, then oblique; postmedial line black-brown slightly defined on outer side by ochreous, oblique to vein 6, incurved at discal fold, slightly angled outwards at veins 4, 3, then incurved and slightly angled outwards at vein 2; a red-brown patch on postmedial costal area with some pale points with dark streaks between them at costa; subterminal line double, black-brown, with spots on its inner side above and below vein 7 and below vein 4; a yellow-green band on its outer edge from vein 7 to inner margin, incurved to vein 4 where it is angled outwards, then again incurved, some yellow-green scales before the spot above vein 7; a slight crenulate black-brown line before termen angled inwards to minute spots defined on outer side by whitish in the interspaces. Hind wing pale grey-brown with a reddish tinge and slight dark irroration; three indistinct sinuous brown lines beyond the cell; postmedial line slight, blackish, sinuous, arising at vein 6; subterminal line double, brown, somewhat diffused, slightly incurved below vein 5 and defined on outer side by a narrow yellow-

green band from vein 5 to submedian fold; a slight crenulate blackish line before termen angled inwards to minute black spots in the interspaces; the underside whitish irrorated with brown, a dark discoidal lunule, indistinct double waved medial line, crenulate postmedial line, sinuous subterminal line with some dark suffusion before it, and series of black points before termen.

Hab. Colombia, Popayan, type † ♀ in Coll. Dognin. *Exp.* 50 millim.

8014. **Zale sabena.** (Plate CCXXIX. fig. 8.)

Homoptera sabena, Schaus, A. M. N. H. (7) viii. p. 42 (1901).
Homoptera amata, Druce, Biol. Centr.-Am., Het. ii. p. 507 (nec i. p. 345).

Head and thorax dark brown mixed with grey; tarsi blackish ringed with white; abdomen grey mixed with reddish brown, the ventral surface brownish white. Fore wing grey suffused with red-brown and thickly irrorated and striated with dark brown, the ante- and postmedial areas suffused with grey-green; slight double blackish subbasal striæ from costa and cell; antemedial line indistinct, double, blackish, waved; an indistinct double waved medial line; a minute black spot in middle of cell; reniform obscurely defined by black and filled in with grey-green; postmedial line indistinct, blackish, waved, bent inwards at discal fold and oblique below vein 4, some whitish points beyond it at costa; subterminal line indistinct, blackish, waved, incurved below vein 4; a series of small black spots before termen followed by minute white spots. Hind wing grey suffused with red-brown and irrorated with dark brown, the terminal area striated with dark brown; a small black discoidal spot; an indistinct double sinuous brown medial line; an indistinct double sinuous blackish postmedial line obsolescent towards costa, some grey-green suffusion beyond it on inner half; a series of small black spots before termen with minute whitish spots beyond them; the underside brownish white striated with brown except on basal and inner areas, a small dark discoidal spot, traces of double sinuous medial line, and a faint postmedial line.

Hab. Mexico, Jalapa (*Schaus, Trujillo*), 1 ♂, 4 ♀; Guatemala, Guatemala City (*Rodriguez*), 1 ♂, 1 ♀ Godman-Salvin Coll. *Exp.* 48–58 millim.

*8015. **Zale configurata.** (Plate CCXXIX. fig. 9.)

Homoptera configurata, Wlk. xiii. 1058 (1857).

♀. Head, thorax, and abdomen red-brown mixed with some grey, the patagia greyer towards tips; tegulæ with black line near base; frons with lateral black bars; pectus and ventral surface of abdomen whitish tinged with red-brown. Fore wing red-brown mixed with grey and irrorated with a few blackish scales, the terminal area greyer striated with brown; subbasal line whitish, oblique, slightly waved, from costa to submedian fold; antemedial

line double, brown filled in with whitish scales on costal half, inwardly oblique and slightly waved; an indistinct oblique sinuous medial line with a pale diffused band before it; reniform very indistinct, defined on inner side by a white point at median nervure and on outer side by some whitish scales; postmedial line double, brown filled in with grey and at costa by white, minutely waved, incurved at discal fold, excurved above and below vein 4, then oblique; subterminal line diffused dark brown with patches of grey-green scales on it, excurved at middle and incurved above and below middle; a series of brown points before termen. Hind wing red-brown mixed with grey and irrorated with a few blackish scales, the basal area paler, the terminal area rather greyer and striated with brown; traces of three sinuous lines on medial area; postmedial line blackish slightly defined on outer side by grey, oblique and very slightly waved; subterminal line blackish, waved, somewhat incurved and with diffused greenish white scales beyond it from discal fold to tornus; the underside whitish, the costal area striated and the terminal area suffused with red-brown, a slight discoidal lunule, two indistinct waved medial lines, a waved postmedial line, and series of dark points before termen.

Hab. Mexico, type † ♀ in Mus. Oxon. *Exp.* 50 millim.

8016. **Zale fuliginosa.** (Plate CCXXIX. fig. 10.)

Homoptera fuliginosa, Wlk. xiii. 1059 (1857).

♀. Head and thorax brown mixed with grey and some black scales; tegulæ with black line near base; frons with lateral black bars; tarsi black ringed with white; abdomen brown mixed with grey and suffused with fuscous, the ventral surface grey irrorated with brown. Fore wing grey-brown suffused with leaden fuscous except on costal area, striated and irrorated with black, a brownish ochreous band beyond the postmedial line from vein 4 to inner margin; an indistinct double sinuous subbasal line from costa to submedian fold; antemedial line indistinctly double, inwardly oblique, sinuous; reniform only defined by a small white spot beyond its upper extremity and white points at its lower extremities; postmedial line black, arising below costa, angled inwards at discal fold, excurved above and below vein 4, then oblique, sinuous; subterminal line indistinct, blackish, sinuous, incurved at discal fold, angled outwards at vein 4, then obliquely incurved; a series of slight blackish points with white points on their outer sides before termen; cilia with fine pale lines at base and middle. Hind wing grey-brown suffused with leaden fuscous except on costal area, irrorated and striated with black; traces of five double sinuous dark lines on antemedial and medial areas; postmedial line double, black, the inner line sinuous, the outer produced to slight streaks above and below vein 6, incurved between discal and submedian folds, and waved towards inner margin; a series of white points before termen; cilia with a fine

pale line at base. Underside whitish striated with brown; fore wing with blackish point in middle of cell, small discoidal spot, and oblique postmedial line; hind wing with small black discoidal lunule, sinuous postmedial line, and slight subterminal shade; both wings with series of black and white points before termen.

Hab. Haiti (*Tweedie*), 1 ♀ type. *Exp.* 46 millim.

8017. **Zale rufosa**, n. sp. (Plate CCXXIX. fig. 11.)

♀. Head and thorax bright rufous slightly mixed with brown, pectus whitish tinged with rufous; tarsi blackish ringed with white; abdomen rufous with slight dark segmental lines, the ventral surface whitish tinged with rufous. Fore wing bright rufous, the basal area suffused with red-brown and slightly irrorated with blackish; a curved reddish ochreous subbasal line from costa to base below the cell; antemedial line indistinct, double, reddish ochreous slightly defined by blackish, inwardly oblique and sinuous below the cell, the inner line dentate below costa and angled inwards in the cell; the medial area with three indistinct double sinuous lines, oblique below the cell and vein 4; a minute dark brown spot in middle of cell; reniform a narrow lunule faintly defined by brown; postmedial line indistinctly double, waved to vein 4, then oblique and sinuous, a fuscous brown patch beyond it on costal area with some pale points on costa; subterminal line double, sinuous, very indistinct to vein 4, then blackish and incurved with leaden fuscous suffusion beyond it; a series of slight blackish points before termen and a terminal series; a fine pale line at base of cilia. Hind wing rufous, the medial area suffused with brown, the basal inner area slightly irrorated with black, the terminal area striated with blackish; four indistinct sinuous dark lines beyond the cell; postmedial line double, black, the inner line sinuous, the outer waved, a narrow leaden fuscous band beyond it arising from apex; a fine pale line at base of cilia; the underside brownish white striated with brown except on inner area, a small dark discoidal spot, faint medial line excurved below costa, slightly waved postmedial and subterminal lines, and a series of black points before termen.

Hab. Jamaica, Cinchona (*Kaye*), 1 ♀ type. *Exp.* 48 millim.

8018. **Zale sexplagiata.** (Plate CCXXIX. fig. 12.)

Homoptera sexplagiata, Wlk. xiii. 1064 (1857).
Homoptera marginalis, Druce, Biol. Centr.-Am., Het. i. p. 343 (nec Wlk.).

Head and thorax rufous mixed with some whitish; palpi brownish grey irrorated with black; frons with blackish lateral bars; pectus and legs grey mixed with brown, the tarsi fuscous with pale rings; abdomen pale rufous with a small dorsal whitish spot on 2nd segment, the crests dark brown at tips, the ventral surface brownish white. Fore wing bright rufous irrorated with a few

black scales, the costa with slight dark striæ; subbasal line slight, whitish, oblique, sinuous, from costa to submedian fold; antemedial line indistinct, brown defined on outer side by whitish, excurved below median nervure, then inwardly oblique and slightly incurved at vein 1; the medial area with three very indistinct double sinuous lines, oblique below the cell and vein 4; a small white mark at middle of costa; reniform a narrow lunule faintly defined by brown; postmedial line slight, blackish, white on costal area, minutely waved to vein 6, then bent inwards, excurved above and below vein 4, then oblique and slightly sinuous, some white points beyond it on costa; subterminal line double, very indistinct and waved to vein 4, then incurved, violaceous white patches beyond it from below apex to above vein 4 and from vein 3 to above tornus; a series of minute brown spots before termen. Hind wing bright rufous, the inner margin whitish; three indistinct waved brown lines beyond the cell; postmedial line slight, double, blackish, minutely waved; the terminal area violaceous white from vein 6 to tornus; a series of minute brown spots before termen; cilia with a fine pale line at base; the underside whitish irrorated with brown, a small blackish discoidal spot, rather diffused postmedial and subterminal lines, and a series of blackish points before termen.

Ab. 1. Fore wing without white patches on terminal area.

Ab. 2. Both wings without white patches on terminal area.

Hab. U.S.A., Florida, Miami; Guatemala, Las Mercedes (*Champion*), 2 ♂, 1 ♀, Volcan de Atitlan (*Champion*), 1 ♀; Panama, Chiriqui, 3 ♂, 3 ♀, Godman-Salvin Coll.; Cuba, (*Schaus*), 1 ♀; Brazil, Amazons, Pará, 2 ♂ type. *Exp.* 40–52 millim.

8019. **Zale salicis.** (Plate CCXXIX. fig. 13.)

Homoptera salicis, Behr, Trans. Am. Ent. Soc. iii. p. 28 (1870), ♀; Smith, Cat. Noct. N. Am. p. 370.

Homoptera rosæ, Behr, Trans. Am. Ent. Soc. iii. p. 28 (1870), ♂; Smith, Cat. Noct. N. Am. p. 369.

♂. Head and thorax red-brown mixed with some grey; tegulæ with black line near base; pectus and legs whitish tinged with rufous, the fore and mid tarsi blackish ringed with white; abdomen pale rufous, the ventral surface whitish tinged with rufous. Fore wing rufous with some grey mixed and slightly irrorated with black, the terminal area striated with brown; antemedial line indistinctly double, blackish defined on outer side by grey, sinuous and oblique from costa to inner margin near base; the medial area with traces of double oblique sinuous lines; reniform a very faintly defined narrow lunule, produced at upper extremity and angled inwards on median nervure, a white point at its lower extremity; postmedial line black, waved to above vein 6, then bent inwards, excurved above and below vein 4, then oblique and

sinuous, a rather darker conical patch beyond it on costa; subterminal line very indistinct, double, oblique, sinuous, with some grey on the outer line, excurved at middle where there is a slight dark mark beyond it. Hind wing rufous slightly mixed with grey and irrorated with black, the terminal area striated with brown; three faint double sinuous lines beyond the cell; postmedial line double, black, the inner line slightly sinuous, the outer minutely waved and slightly bent inwards between discal and submedian folds, a faint greenish grey line beyond it. Underside grey tinged and striated with brown; fore wing with faint postmedial line and subterminal shade; hind wing with slight postmedial line excurved below costa, and double subterminal line.

♀. Fore wing whitish tinged with rufous and striated with brown, the basal costal area, a medial patch from costa including the reniform, and a postmedial patch on costal area dark red-brown, a curved dark shade from termen at vein 4 to inner margin before tornus.

Hab. U.S.A., California (*D'Urban*), 2 ♂, 1 ♀, San Francisco, San Louis Obispo, Los Angeles Co., Sonoma Co. *Exp.* 46–54 millim.

Larva. Brown with ventral series of black patches. Food-plants: Willow and Rose.

8020. Zale lunata.

Noctua lunata, Drury, Ill. Exot. Ins. i. p. 40, pl. xx. f. 3 (1770); Westw.-ed. Drury, i. p. 37, pl. 20. f. 3; Smith, Cat. Noct. N. Am. p. 368.
Noctua edusa, Drury, Ill. Exot. Ins. ii. p. 42, pl. xxiv. f. 4 (1773); Westw.-ed. Drury, ii. p. 46, pl. xxiv. f. 4; Druce, Biol. Centr.-Am., Het. i. p. 342.
Noctua fluctuaris, Hübn. Eur. Schmett., Noct. f. 449 (1818).
Erebus putrescens, Guérin, Icon. R. Anim. p. 522, pl. 89. f. 3 (1829).
Homoptera saundersii, Bethune, Proc. Ent. Soc. Phil. iv. p. 215 (1865).
Homoptera marginalis, Wlk. xxxiii. 878 (1865).

Head and thorax red-brown with some grey and blackish scales; tegulæ with black line near base; pectus and legs pale rufous, the tarsi black ringed with white; abdomen red-brown with slight dark segmental lines and the crests darker, the ventral surface whitish tinged with brown. Fore wing red-brown the terminal area striated with blackish; a slight curved pale subbasal line from costa to median nervure; antemedial line very indistinct, double, blackish faintly defined on outer side by grey, sinuous, inwardly oblique below the cell; medial area with two indistinct double oblique sinuous dark lines; reniform a very indistinct oblique bar with white point at its lower extremity; postmedial line black, waved to vein 5, excurved above and below vein 4, then oblique and sinuous; subterminal line double, dark, oblique, sinuous, slightly defined on outer side by grey, a slight incurved dark shade beyond it from termen at vein 4 to inner margin; a series of brown striæ before termen. Hind wing red-brown with slight

dark irroration, the terminal area striated with blackish; three indistinct double sinuous lines beyond the cell; postmedial line double, black, the inner line sinuous, the outer arising at vein 6, minutely waved and slightly bent inwards at vein 5, an oblique dark shade beyond it from apex followed by a slight sinuous greenish

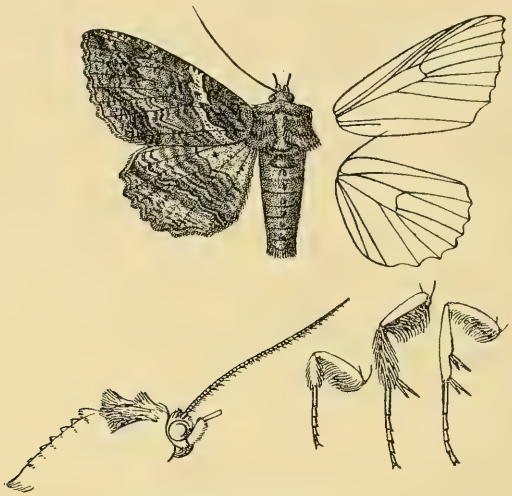


Fig. 56.—*Zale lunata*, ♂. ½.

grey line. Underside grey tinged and striated with brown; fore wing with minute blackish spots in middle of cell and on discocellulars and faint postmedial and subterminal lines; hind wing with minute black discoidal spot and faint medial, postmedial, and subterminal lines.

Ab. 1. *saundersi*. Wings variegated with reddish ochreous.

Ab. 2. Fore wing with diffused ochreous white band beyond the postmedial line except on costal area.

Ab. 3. *edusa*. Fore wing with the terminal area suffused with violaceous white except at apex and middle; hind wing with the terminal area suffused with violaceous white except towards apex.

Hab. CANADA, Ontario, Kingsville (*Hills*), 1 ♂, 4 ♀; U.S.A., East of Rocky Mts., 7 ♂, 9 ♀, New York (*Fuchs*), 1 ♂, Evans Center (*Grote*), 1 ♂, Pennsylvania, New Brighton (*Merrick*), 1 ♀, Texas; MEXICO, Oaxaca (*Sallé*), 1 ♂ type *marginalis*, Jalapa (*Trujillo*), 1 ♂, 2 ♀, Mexico City (*Hoege*), 1 ♀, Vera Cruz, Cordova (*Rümeli*), 1 ♂, 1 ♀, Atoyac (*Schumann*), 1 ♀; GUATEMALA, Zapote (*Champion*), 1 ♀; PANAMA, Chiriqui (*Champion*), 2 ♀, Godman-Salvin Coll.; BAHAMAS, Abaco (*Bonhote*), 1 ♀; GRENADA (*H. H. Smith*), 2 ♀; ARGENTINA (*O. Thomas*), 3 ♀, Rioja (*Giacomelli*), 1 ♀. *Exp.* 48–60 millim.

Larva. Guérin, Icon. R. Anim., Ins. pl. 89. f. 3; Guen. Noct. iii. p. 14; French, Can. Ent. xiv. p. 131.

Yellowish brown; dorsal and lateral areas each with three alternating light and dark stripes; ventral surface paler with an elliptical red-brown spot on each somite; piliferous spots black, each with a white spot on abdominal somites; 1st and 2nd pair of prolegs about half the length of the others. Food-plants: Willow etc., forming a cocoon of leaves spun together by silk.

Egg. Pale green with vertical ridges.

*8021. **Zale rhigodora.** (Plate CCXXXII. fig. 32.)

Zale rhigodora, Dyar, Proc. U.S. Nat. Mus. xliv. p. 299 (1913).

♂. Head, thorax, and abdomen dark red-brown. Fore wing nearly uniform dark red-brown without distinct irroration or striation; the basal area with darker mottling and faint blackish striation; the antemedial line almost obsolete, defined on outer side by bluish white, curved; reniform small, blackish, slightly defined on outer side by white; postmedial line indistinctly double, black, slightly waved, incurved at discal fold, where there is a small black spot before it, excurved above and below vein 4, then incurved, defined on outer side by white at costa and with some white points beyond it on costa; subterminal line blackish, distinct, excurved at middle, then incurved, a slight curved dark shade beyond it from termen at vein 4 to inner margin defined on outer side by bluish white and with white spot below vein 3. Hind wing dark red-brown; several indistinct waved lines beyond the cell; postmedial line rather more distinct, double, waved; subterminal line double, dark, somewhat bent inwards between discal and submedian folds and defined on outer side by bluish white except towards costa.

♀. Wings with the bluish white shadings replaced by blackish.

Hab. Mexico, Misantla (*Müller*). *Exp.* 50 millim. This species is unknown to me, figured from a drawing from type in U.S. Nat. Mus.

8022. **Zale phæograpta**, n. sp. (Plate CCXXIX. fig. 14.)

♀. Head pale red-brown mixed with some darker brown; thorax fuscous brown slightly mixed with greyish; palpi with some blackish at base; frons with lateral black bars; pectus and legs ochreous tinged with red-brown, the tarsi blackish with pale rings; abdomen pale ochreous brown, the base and terminal half tinged with fuscous, the crests blackish, a blackish line at base of anal tuft, the ventral surface ochreous white slightly irrorated with brown. Fore wing ochreous tinged with rufous and slightly irrorated with black, the costal area suffused with fuscous, the basal area with red-brown; antemedial line indistinctly treble, sinuous, very indistinct to median nervure, then inwardly oblique; the medial area with three indistinct double sinuous lines, oblique

below the cell and vein 4; a minute blackish spot in middle of cell; reniform a narrow oblique lunule defined by diffused blackish; postmedial line indistinct, double, with a white striga at costa, waved to vein 4, then very oblique and slightly sinuous; a minute blackish spot on its inner side below vein 2; a wedge-shaped blackish patch on costal area before the subterminal line, which is double, indistinct, and waved to vein 4, then oblique and with narrow blackish band beyond it arising from termen; the terminal area striated with brown and with a series of dark striæ before termen oblique on apical half. Hind wing ochreous suffused with red-brown and slightly irrorated with black, the terminal area striated with black; four slightly sinuous brown lines beyond the cell; postmedial line double, black, the outer line slightly waved, a narrow blackish band beyond it arising from below apex and with a slight whitish line on it at middle; the underside whitish striated with brown, a small blackish discoidal spot and faint medial postmedial and subterminal lines.

Hab. PARAGUAY, Sapucay (*Foster*), 2 ♀ type. *Exp.* 54 millim.

8023. **Zale unilineata.** (Plate CCXXIX. fig. 15.)

Homoptera unilineata, Grote, Can. Ent. viii. p. 108 (1876); Holland, Moth Book, p. 278, pl. xxxvii. f. 14; Smith, Cat. Noct. N. Am. p. 371.

♂. Head, thorax, and abdomen red-brown mixed with some ochreous; palpi irrorated with blackish; tarsi blackish ringed with white. Fore wing red-brown irrorated with black, the terminal area tinged with grey; antemedial line indistinct, dark, inwardly oblique below the cell; the medial area with traces of three sinuous lines; a minute black spot in middle of cell; reniform a narrow lunule defined by fuscous brown; postmedial line hardly traceable except towards costa, double, oblique to below vein 7, incurved at discal fold, excurved at vein 4, then incurved and slightly waved; subterminal line double, red-brown filled in with greyish, incurved to discal fold, excurved at vein 4, then again incurved; the terminal area with a few faint brown striæ; a slight crenulate red-brown terminal line. Hind wing greyish tinged with red-brown and irrorated with brown, the terminal area with slight dark striæ; traces of a sinuous brown medial line; postmedial line very indistinct, double, brown, sinuous; subterminal line black, sinuous, closely approximated to the postmedial line; a slight crenulate brown terminal line; the underside grey tinged with rufous and irrorated with brown, traces of three sinuous lines on medial area and of a double subterminal line.

Ab. 1. More purple-brown.

Hab. CANADA, Ontario, London (*Saunders*), 1 ♂ type, Manitoba, Winnipeg (*Wallis*), 1 ♂; U.S.A., New York, 1 ♂, Center (*Bailey*), 3 ♂, Distr. of Columbia. *Exp.* 42–46 millim.

8024. **Zale declarans.** (Plate CCXXIX. fig. 16.)

Homoptera declarans, Wlk. xiii. 1057 (1857); Smith, Cat. Noct. N. Am. p. 371.

Head, thorax, and abdomen rufous mixed with ochreous, the last with the dorsal crests fuscous tipped with white; palpi irrorated with black, the 3rd joint white at tips; frons with lateral black bars; pectus and legs whitish mixed with brown, the fore tibiæ with white band, the tarsi blackish ringed with white; ventral surface of abdomen whitish irrorated with brown. Fore wing pale red-brown slightly irrorated with black, the basal area rather darker; a faint double sinuous brown subbasal line from costa to submedian fold; antemedial line indistinct, double, sinuous, inwardly oblique below the cell; two indistinct double sinuous medial lines; a minute blackish spot in middle of cell; reniform a narrow dark brown lunule; postmedial line indistinct, double, waved, oblique to below vein 7, slightly bent inwards to vein 6, somewhat oblique below vein 4, and angled inwards at vein 2; subterminal line double, brown filled in with ochreous, slightly excurved below vein 7, excurved at middle; a series of blackish points before termen. Hind wing greyish suffused with reddish brown and irrorated with dark brown; two indistinct sinuous pale lines beyond the cell; postmedial line indistinct, double, brown, minutely waved; subterminal line pale grey defined on each side by brown, slightly sinuous; the terminal area striated with brown; the underside grey tinged with red-brown and irrorated with dark brown, a slight blackish discoidal lunule, indistinct waved postmedial line, traces of a subterminal line, and series of black points before termen.

Hab. U.S.A., Florida (*Doubleday*), 1 ♂ type, Enterprise, 1 ♀.
Exp. ♂ 40, ♀ 44 millim.

8025. **Zale albidula.** (Plate CCXXIX. fig. 17.)

Homoptera albidula, Wlk. xxxiii. 880 (1865).

♀. (Head wanting); thorax white mixed with pale red-brown and some blackish scales; tegulæ with black line near base; tarsi blackish ringed with white; abdomen white mixed with pale red-brown, the basal crest blackish at tip; slight dorsal black segmental lines, the terminal segment irrorated with black. Fore wing white tinged in parts with pale red-brown, especially on basal area and postmedial costal area, and sparsely irrorated with black scales; antemedial line indistinctly treble, brown, angled inwards in cell and oblique below the cell to inner margin near base; the medial area with three indistinct double oblique sinuous lines; reniform very indistinctly defined by brown, narrow, oblique, and with irregular outer edge; postmedial line blackish, waved to vein 6, angled inwards at vein 5, excurved above and below vein 4, then oblique and slightly sinuous, a faint rufous line beyond it; subterminal line indistinctly double, dark, oblique from apex to vein 6,

waved to vein 4, then incurved and with narrow dark band beyond it suffused with white scales; a series of oblique dark striæ just before termen and a terminal series of dark points. Hind wing white tinged with pale red-brown except on basal area which is irrorated with a few black scales; three slightly sinuous brown lines beyond the cell; postmedial line double, black, slightly excurved below costa, a narrow dark band beyond it suffused with violaceous white and with a series of small black spots on its outer edge; the terminal area striated with blackish; the underside white irrorated with pale brown, three faint sinuous lines beyond the cell, a waved postmedial line, two faint waved subterminal lines, and a series of blackish points before termen.

Hab. HAITI (*Tweedie*), 1 ♀ type. *Exp.* 40 millim.

8026. **Zale galbanata.** (Plate CCXXIX. fig. 18 ♂, 19 ♀.)

Homoptera galbanata, Morr. Proc. Acad. Nat. Sci. Phil. 1875, p. 435; Smith, Cat. Noct. N. Am. p. 370.

♂. Head and thorax pale grey mixed with dark brown, the tegulæ with blackish lines near base and tips; palpi blackish; frons with lateral black bars; tarsi blackish ringed with white; abdomen pale grey irrorated with dark brown and with slight dark segmental lines. Fore wing pale grey irrorated with dark brown and suffused in parts with reddish brown, the terminal area striated with blackish; a slight curved black subbasal striga from costa; antemedial line black, inwardly oblique, sinuous, a faint sinuous whitish line before it and a paler band beyond it; an oblique dentate black medial line with a diffused dentate brown line beyond it; reniform a narrow lunule slightly defined by black; postmedial line double, the inner line black, the outer brown, excurved below costa, incurved at discal fold, excurved at vein 4, then oblique and slightly sinuous; subterminal line double, brown, oblique from near apex to vein 6, then closely approximated to the postmedial line, excurved at vein 4, then incurved and slightly sinuous; terminal area bluish white except at apex and middle. Hind wing pale grey tinged with brown and slightly irrorated with black, the terminal area striated with brown; three sinuous brown lines beyond the cell; postmedial line double, black, the outer line somewhat incurved below vein 6, a faint brown line beyond it, below discal fold defined on outer side by white followed by blue-grey; the underside whitish irrorated with brown, a blackish discoidal striga with faint bar above it from costa, a sinuous postmedial line and faint subterminal line.

♀. Wings more uniform grey with hardly any brown shades; fore wing without the blue-white on terminal area.

Hab. CANADA, Manitoba, Winnipeg (*Wallis*), 4 ♂, 20 ♀; U.S.A., Eastern and Southern States to Texas and West to Colorado, Nebraska, Kansas, New Mexico. *Exp.* 40–44 millim.

8027. **Zale edusina.** (Plate CCXXIX. fig. 20 ♂, 21 ♀.)

Homoptera edusina, Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 14 (1875), ♂; Smith, Cat. Noct. N. Am. p. 370.
Homoptera atritincta, Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 14 (1875), ♀.

♂. Head and thorax fuscous brown mixed with some bluish white; pectus and legs brown mixed with grey, the tarsi black ringed with white; abdomen brown, the crests blackish, the ventral surface irrorated with grey. Fore wing fuscous brown mixed with blue-grey and slightly irrorated with black, the inner half of medial area tinged with red-brown; subbasal line black, oblique, from costa to submedian fold; antemedial line double, black, waved, inwardly oblique below the cell, a band of pale blue-grey suffusion beyond it; the medial area with three indistinct oblique waved brown lines; reniform a narrow lunule defined by blackish and with small white spots on its outer edge; postmedial line black, defined on each side by white at costa, oblique to below vein 7, then minutely waved, excurved at vein 4, then oblique and sinuous, some white points beyond it on costa; subterminal line black, strong, oblique to vein 5, excurved at vein 4, then incurved and sinuous; the terminal area with bluish white patches from below apex to vein 5 and from below vein 4 to above tornus; a fine crenulate dark terminal line with small white spots beyond it in the interspaces. Hind wing fuscous brown mixed with grey and faintly tinged with reddish; three indistinct minutely waved grey lines beyond the cell; postmedial line double, black, the inner line minutely waved, the outer slightly sinuous, a band of bluish white suffusion beyond it from discal fold to tornus; the terminal area striated with black; a slight crenulate dark terminal line with small whitish spots beyond it in the interspaces; the underside brownish white thickly irrorated with brown, a black discoidal striga, dark postmedial line waved on costal area, and faint subterminal line.

♀. Wings without the white on terminal areas.

Ab. 1. Fore wing without the minute white spots on outer edge of reniform.

Hab. U.S.A., ? New York, ? Kentucky, Texas, 4 ♂, 4 ♀ type and type *atritincta*. *Exp.* 34–40 millim.

8028. **Zale æruginosa.** (Plate CCXXX. fig. 1.)

Ypsia æruginosa, Guen. Noct. iii. p. 17, pl. 18. f. 7 (1852); Smith, Cat. Noct. N. Am. p. 373.
Homoptera plenipennis, Wlk. xiii. 1055 (1857).

Head and thorax black-brown irrorated with a few white scales; palpi with the 3rd joint white at tips; basal joint of antennæ white on outer side; pectus red-brown, the fore tibiæ and tarsi blackish ringed with white; abdomen fuscous mixed with some grey and black, the ventral surface pale grey-brown. Fore wing

fuscous brown suffused with blue-grey and tinged in parts with red-brown; subbasal double white striæ from costa; antemedial line double, black, inwardly oblique, sinuous, a band of greenish white irroration beyond it; two very indistinct oblique waved medial lines with some greenish white scales on them; a minute black spot in middle of cell; reniform an oblique bar defined on inner side by black and by greenish white points above and below and on outer side by diffused greenish white; postmedial line black, oblique, minutely waved and defined on each side by white to below vein 7, bent inwards below vein 6, excurved at vein 4, then indistinctly double, oblique and slightly sinuous, some minute white spots beyond it on costa; subterminal line black, incurved and obsolescent below vein 7, excurved at vein 4, then double, the inner line strong, the outer slight, oblique and sinuous; the terminal area striated with black and with a series of diffused greenish white spots; a series of black and white points before termen. Hind wing fuscous brown suffused with blue-grey, the base, costal area, and inner margin with a red-brown tinge; some black and white irroration on basal part of vein 1; three indistinct slightly sinuous dark lines beyond the cell; postmedial line black, arising at vein 7, slightly incurved and sinuous; terminal area striated with black and with a series of diffused greenish white spots; a series of black and white points before termen and a fine pale line at base of cilia; the underside greyish suffused with red-brown and irrorated with brown, a small blackish discoidal spot, two indistinct sinuous medial lines, a postmedial line, and traces of a subterminal line.

Ab. 1. Blacker; fore wing with hardly any reddish tones and much less greenish irroration.

Hab. Canada; U.S.A., Eastern States to Florida and west to the Mississippi and Rocky Mts., New York, Center (*Bailey*), 1 ♂, 1 ♀, Florida (*Doubleday*), 1 ♂ type *plenipennis*, Enterprise, 1 ♂, 1 ♀. *Exp.* 42–48 millim.

8029. **Zale undularis.** (Plate CCXXX. fig. 2.)

Noctua undularis, Drury, Ill. Exot. Ins. i. p. 19, pl. ix. f. 4 (1770); Smith, Cat. Noct. N. Am. p. 372.
Homoptera nigricans, Bethune, Proc. Ent. Soc. Phil. iv. p. 214 (1864); Smith, Cat. Noct. N. Am. p. 369.
Ypsia umbripennis, Grote, Can. Ent. viii. p. 109 (1876).

Head and thorax black-brown irrorated with silvery blue scales; pectus and legs dark brown, the tarsi black ringed with white; abdomen dark brown, the crests blackish. Fore wing black-brown suffused with silvery blue, the terminal area striated with black; subbasal line double, black, sinuous, from costa to submedian fold; antemedial line double, black, sinuous, inwardly oblique; medial area with three oblique sinuous dark lines; reniform defined by black, constricted at middle and produced at upper extremity;

postmedial line double, black, fine, oblique to below vein 7, incurved at discal fold, excurved at middle, then oblique and slightly sinuous, some white points beyond it on costa; subterminal line black, oblique, sinuous, excurved at middle, a rather diffused ochreous spot on it at discal fold; a series of minute black spots defined on outer side by ochreous before termen. Hind wing black-brown suffused with silvery blue, the costal area to beyond middle and the inner margin tinged with red-brown, the terminal area striated with black; four indistinct slightly sinuous dark lines beyond the cell; postmedial line double, fine, black, sinuous, a black line beyond it slightly defined on outer side by ochreous and somewhat incurved between discal and submedian folds; a series of minute pale points before termen; the underside dark red-brown slightly irrorated with whitish, three indistinct lines on medial area, postmedial line slight, dark, minutely waved, a faint subterminal line, and series of black points before termen.

Ab. 1. Fore wing with the ochreous spot on subterminal line replaced by a few whitish scales.

Ab. 2. *umbripennis*. Fore wing with the inner half of medial area browner, the area from before the outer medial line to the subterminal line suffused with grey-white except on costal area.

Hab. CANADA, Ontario, London (*Saunders*), 1 ♀, Grimsby (*Pettit*), 1 ♀; U.S.A., Eastern States to Florida and west to Colorado, Massachusetts, Beverly (*Burgess*), 3 ♂, 2 ♀, New York, Center (*Grote*), 2 ♂, 1 ♀, Texas, Dallas (*Boll*), 1 ♂. *Exp.* 42–52 millim.

8030. **Zale corvus.** (Plate CCXXX. fig. 3.)

Pseudanthracia corvus, Schaus, A. M. N. H. (7) viii. p. 78 (1901).
Ypsia undularis, Druce, Biol. Centr.-Am., Het. i. p. 346 (nec Drury).

♂. Head and thorax black-brown slightly irrorated with silvery blue; pectus whitish tinged with red-brown; tarsi ringed with whitish; abdomen black-brown slightly irrorated with grey, the ventral surface pale red-brown. Fore wing black-brown tinged with red-brown, especially in submedian interspace, and suffused with silvery blue; subbasal line double, indistinct, black, oblique, from costa to submedian fold; antemedial line double, indistinct, black, oblique, excurved in submedian interspace; an indistinct double oblique waved medial line; reniform a narrow lunule defined by black; postmedial line double, black, oblique to below vein 7, incurved at discal fold, oblique and sinuous below vein 4; subterminal line black, angled outwards below veins 7 and 4, then incurved and sinuous; the terminal area slightly striated with black. Hind wing black-brown suffused with silvery blue, the costal area and inner margin reddish brown; three indistinct sinuous dark lines on medial area; postmedial line indistinctly double, black, sinuous; subterminal line black, closely approximated to the postmedial line, angled outwards at vein 3, then incurved;

the terminal area striated with black; the underside pale reddish brown irrorated with silvery grey, traces of postmedial and subterminal lines.

Hab. Mexico, Jalisco (*Schumann*), 1 ♂, Godman-Salvin Coll. *Exp.* 46 millim.

8031. **Zale coracias.** (Plate CCXXX. fig. 4.)

Anthracia coracias, Guen. Noct. iii. p. 19 (1852); Smith, Cat. Noct. N. Am. p. 373.
Anthracia cornix, Guen. Noct. iii. p. 19, pl. 15. f. 8 (1852); Smith, Cat. Noct. N. Am. p. 373.
Homoptera cinerea, Morr. Can. Ent. vii. p. 148 (1875); Smith, Cat. Noct. N. Am. p. 371.

♂. Head, thorax, and abdomen black-brown glossed with silvery grey; pectus reddish brown; tarsi with pale rings. Fore wing black-brown suffused with silvery blue and irrorated with black, tinged in parts with red-brown especially on postmedial area; slight double subbasal black striæ from costa; antemedial line indistinct, double, black, waved; a double waved blackish medial line; a black point in middle of cell; reniform defined by black and with a patch of brownish grey beyond it; postmedial line indistinctly double, black, oblique to below vein 7, incurved at discal fold, excurved at vein 4, then oblique and sinuous; subterminal line black, rather diffused, excurved at vein 4, then incurved and sinuous; the terminal area striated with black; a series of black and white points before termen. Hind wing reddish brown suffused with silvery blue except on costal area, in submedian fold and on inner margin; three very indistinct sinuous dark lines beyond the cell; postmedial line black, sinuous, strong, arising at vein 6; the terminal area striated with black and with a series of black and white points just before termen; the underside grey suffused with reddish brown.

♀. Wings blacker with hardly any reddish tones.

Hab. Canada; U.S.A., Eastern and Central States, 1 ♂, 3 ♀, Georgia, 2 ♂, Florida (*Doubleday*), 2 ♂, 1 ♀, Texas, New Mexico. *Exp.* 38–42 millim.

8032. **Zale janisca.** (Plate CCXXX. fig. 5.)

Homoptera janisca, Schaus, A. M. N. H. (7) viii. p. 40 (1901).
Homoptera dukinfieldia, Schaus, A. M. N. H. (7) viii. p. 40 (1901).

♀. Head, thorax, and abdomen red-brown mixed with some greyish; palpi, pectus, legs, and ventral surface of abdomen brownish white irrorated with brown, the fore and mid tarsi black ringed with white. Fore wing red-brown irrorated with blackish; an indistinct double sinuous subbasal line from costa to submedian fold; antemedial line indistinctly double, sinuous, inwardly oblique below the cell; a black point in middle of cell; reniform defined on inner side by blackish suffusion and with white

points on outer edge; an indistinct oblique sinuous medial line; postmedial line double, blackish, sinuous, excurved below vein 5, then oblique, a faint wedge-shaped blackish shade beyond it from costa; subterminal line double, sinuous, very indistinct to vein 4, then oblique; a series of small blackish spots before termen defined on outer side by whitish. Hind wing red-brown, the terminal area striated with blackish; an indistinct sinuous antemedial line and two lines beyond the cell; postmedial line double, black, sinuous, the inner line arising at vein 7, the outer at vein 6; a series of small brown spots before termen; a fine pale line at base of cilia; the underside brownish white striated with brown except on inner area, a small blackish discoidal spot, two curved lines beyond the cell, and a postmedial line.

Hab. Brazil, Castro Paraña (*D. Jones*), 1 ♀. *Exp.* 62 millim.

8033. **Zale insuda.** (Plate CCXXX. fig. 6 ♂, 7 ♀.)

Phæocyma insuda, Smith, Pr. U.S. Nat. Mus. xxxv. p. 234 (1909).

♂. Head and thorax red-brown with some grey scales; palpi blackish; frons whitish below and with lateral black bars; tegulæ with blackish line near base; pro- and mesothorax with indistinct dark lines; pectus and legs whitish suffused with brown, the tarsi blackish ringed with white; abdomen grey-brown with fine black segmental lines. Fore wing bright red-brown mixed with some whitish and irrorated with blackish; subbasal line blackish, sinuous, from costa to vein 1; antemedial line double, blackish, sinuous, oblique below submedian fold, a paler band beyond it; the medial area with three indistinct waved lines, the outer line excurved beyond the cell; reniform a narrow bar faintly defined by black and with some white points on its outer edge; postmedial line double, black, waved, oblique towards costa, excurved at vein 4, then oblique, some white points beyond it on costa; subterminal line double, the inner line black, the outer brown defined on outer side by bluish white suffusion, arising from costa near apex, oblique to vein 5, excurved at vein 4, then oblique and sinuous; the terminal area striated with black. Hind wing red-brown irrorated with blackish, the terminal area striated with black; the medial area with three slightly sinuous brown lines; postmedial line fine, black slightly sinuous, closely approximated to the sinuous black subterminal line, which is angled outwards at vein 6, then slightly incurved and with a rather diffused bluish white band beyond it; the underside pale grey-brown, a slight dark discoidal lunule and indistinct sinuous postmedial and subterminal lines.

♀. Wings more uniform reddish brown without the bright red-brown and bluish white shades; both wings with fuscous brown shade beyond the subterminal line.

Hab. U.S.A., Arizona, cotypes † ♂ ♀ in Coll. W. Barnes, Yavapai Co. Prescott (*Kunzé*), 1 ♀, Sta. Rita Mts., Chiricahua Mts. *Exp.* 46 millim.

8034. **Zale minerea.** (Plate CCXXX. fig. 8 ♂, 9 ♀.)

Homoptera minerea, Guen. Noct, iii. p. 15, pl. 18. f. 6 (1852); Smith, Cat. Noct. N. Am. p. 369.
Homoptera involuta, Wlk. xiii. 1055 (1857).
Homoptera albofasciata, Bethune, Canadian Journ. x. p. 256 (1865); Smith, Cat. Noct. N. Am. p. 370.
Phæocyma norda, Smith, Pr. U.S. Nat. Mus. xxxv. p. 236 (1909).

♂. Head and thorax bright red-brown mixed with some ochreous white; tegulæ with black line near base; palpi irrorated with black; frons with black lateral bars; tibiæ irrorated with black, the tarsi black ringed with white; abdomen rufous irrorated with a few black scales and with slight black segmental lines, the 1st segment darker, the ventral surface grey irrorated with brown. Fore wing bright rufous variegated with some yellowish, the basal area red-brown irrorated with blackish, the terminal area grey-white tinged with rufous; subbasal line double, blackish defined by some grey scales, obliquely curved from costa to submedian fold, the lines well separated; antemedial line double, blackish defined on each side by some grey, sinuous, inwardly oblique below the cell, the lines well separated; a double oblique irregularly sinuous red-brown medial line; a patch of red-brown suffusion from middle of costa enclosing the reniform which is indistinctly defined; post-medial line double, minutely waved and blackish to vein 5, then rufous, excurved at vein 4, then oblique and sinuous, a red-brown patch beyond it on costal area with some white points on costa; subterminal line double defined on outer side by white, the inner line black towards costa and below vein 4, sinuous, oblique below costa, excurved at middle, then incurved, an oblique brown bar beyond it from apex and a patch at middle; a series of brown points before termen; cilia red-brown mixed with dark brown. Hind wing bright rufous, the basal area tinged with grey and irrorated with some black scales, the terminal area striated with blackish; three double sinuous brown lines beyond the cell; post-medial line double, the inner line black, minutely waved and slightly bent inwards between veins 5 and 2, defined on outer side by white and followed by a diffused greenish grey band from vein 5 to tornus; a fine pale line at base of cilia. Underside whitish tinged with rufous and irrorated with brown; fore wing with discoidal lunule defined by black, curved minutely waved postmedial line, and slight subterminal line; hind wing with black discoidal lunule, two sinuous lines beyond the cell, a sinuous minutely waved post-medial line, and slight subterminal line.

Ab. 1. *albofasciata*. Wings with the terminal area concolorous, the subterminal line defined on outer side by white.

Ab. 2. Similar but with the subterminal line not defined on outer side by white.

♀. Fore wing more uniform brown without the red-brown and ochreous shades.

Ab. 3. Fore wing ochreous whitish prominently striated with brown, the basal area obliquely from above end of cell and the

postmedial costal area suffused with dark brown; an obliquely incurved dark brown shade from middle of termen to inner margin before tornus.

Ab. 4. Wings greyish nearly uniformly suffused with black-brown.

Hab. Canada, Montreal (*Caulfield*), 1 ♀, Ontario, London (*Reed*), 1 ♀, Orillia (*Bush*), 1 ♀, Manitoba, Winnipeg (*Wallis*), 2 ♂, 4 ♀, Cartwright, Br. Columbia, Kaslo, Rossland, Arrowhead Lake, Vancouver I., cotypes † ♂ ♀ *norda* in Coll. W. Barnes; U.S.A., east of Rocky Mts. (*Doubleday*), 6 ♂, 7 ♀ type *involuta*, New York, Center (*Bailey*), 1 ♂, Albany (*Bailey*), 1 ♀, Florida, Arizona. *Exp.* 46–52 millim.

*8035. **Zale excellens.** (Plate CCXXX. fig. 10.)

Homoptera excellens, Schaus, A. M. N. H. (8) x. p. 510 (1912).

♂. Head and thorax bright rufous; palpi black-brown at sides; antennæ black-brown; tarsi brown with slight pale rings; abdomen pale grey-brown with darker irroration, the ventral surface tinged with rufous. Fore wing rufous mixed with violaceous grey and slightly irrorated with black, the terminal area violaceous grey; subbasal line rather diffused, blackish, angled outwards below costa and ending at submedian fold, some blackish suffusion below it on inner area; antemedial line indistinctly double, minutely waved, excurved below the costa and cell, some violaceous grey suffusion beyond it; a black point in middle of cell and ill-defined brassy green discoidal lunule irrorated with brown, a double sinuous red-brown medial line, angled outwards at veins 2 and 1, and an indistinct curved dentate red-brown line beyond the cell; postmedial line blackish, oblique, sinuous and defined on outer side by whitish to below vein 7, incurved at discal fold, angled outwards at vein 4, then incurved, waved, and indistinctly double towards inner margin, some white points beyond it on costa; subterminal line red-brown defined on outer side by diffused brassy green, incurved to below vein 4 where it is angled outwards and has a small dentate black spot before it, then again incurved; a series of black points before termen with a larger point at submedian fold; cilia red-brown. Hind wing greyish suffused with rufous, the basal area rather paler; three indistinct minutely waved brown lines on medial area; postmedial line blackish, slightly sinuous, obsolescent towards costa; subterminal line indistinctly double, red-brown, sinuous, defined on outer side by diffused brassy green with violaceous white suffusion beyond it; a series of black points, except towards apex, before termen and a striga towards tornus; a fine whitish line at base of cilia; the underside paler irrorated with dark brown, a small black discoidal spot, two waved medial lines, and a crenulate postmedial line.

Hab. Costa Rica, Juan Vinas (*Schaus*), type † ♂ in U.S. Nat. Mus. *Exp.* 48 millim.

8036. Zale lunifera. (Plate CCXXX. fig. 11.)

Phæocyma lunifera, Hübn. Zutr. Ex. Schmett. p. 19, ff. 97, 98 (1818); Smith, Cat. Noct. N. Am. p. 368.
Homoptera lineosa, Wlk. xiii. 1056 (1857).

Head and thorax red-brown mixed with ochreous; palpi, pectus, and legs ochreous mixed with brown, the tarsi blackish with pale rings; abdomen greyish tinged with red-brown. Fore wing greyish suffused with rufous and with slight dark irroration, the basal area deeper rufous; subbasal line double, blackish, slightly defined on inner side by white, excurved below costa and ending at submedian fold; antemedial line double, blackish, the inner line indistinct, sinuous, inwardly oblique below submedian fold, a band of whitish suffusion beyond it; two oblique somewhat dentate medial dark lines; reniform a dark brown lunule; postmedial line black, angled outwards below vein 7, incurved at discal fold, excurved at vein 4, then oblique and sinuous, some whitish points beyond it on costa; subterminal line double, brown, incurved on costal half, excurved at vein 4, then again incurved, some whitish suffusion beyond it, an oblique dark shade from apex, and some dark suffusion at middle of terminal area; a slight crenulate brown terminal line. Hind wing greyish suffused with red-brown, the terminal area faintly striated with brown; three indistinct waved brown lines beyond the cell slightly defined on outer side by whitish; postmedial line double, black, sinuous, the outer line slightly defined on outer side by whitish, somewhat incurved between discal and submedian folds where there is a band of whitish suffusion beyond it; a slight crenulate brown terminal line; the underside greyish tinged and irrorated with brown, a dark discoidal point, faint sinuous medial line, dark postmedial line waved on costal area, and faint subterminal line.

Ab. 1. *lineosa*. Wings less strongly tinged with red-brown, the medial line more distinct.

Hab. CANADA, Ontario, Orillia (*Bush*), 1 ♂; U.S.A., Eastern States to Texas and west to the Rocky Mts., 7 ♂, 4 ♀ type *lineosa*. *Exp.* 42–48 millim.

Larva. Packard, Bull. Dep. Agric. Ent. xii. p. 22 (1886).

Wood-brown sometimes tinged with reddish or greenish; dorsal line dark; lateral line white defined below by the pale red spiracular line; a lateral series of black dots; ventral surface pale glaucous green; 8th somite with a pair of small dorsal tubercles represented on the other segments by oblique dashes, the penultimate segment with a transverse ridge; head reddish with oval or V-shaped white spots at sides. Food-plant, *Pinus*. *Pupa* with a slight whitish bloom.

8037. Zale penna. (Plate CCXXX. fig. 12.)

Homoptera penna, Morr. Proc. Bost. Soc. N. H. xviii. p. 241 (1875); Smith, Cat. Noct. N. Am. p. 371.

Head and thorax ochreous mixed with red-brown; palpi irrorated

with black, the 3rd joint black, white at tips; frons with lateral black bars; pectus and legs whitish tinged with brown, the fore and mid tarsi black ringed with white; abdomen greyish tinged with brown and with slight black segmental lines. Fore wing pale greyish tinged with rufous, the basal area suffused with brown and irrorated with black; subbasal line indistinct, double, dark, excurved below costa and ending at submedian fold; antemedial line double, blackish, inwardly oblique and sinuous below the cell; two indistinct oblique waved medial lines; reniform a small lunule defined by diffused blackish; postmedial line black, indistinctly double towards costa, excurved below vein 7, incurved at discal fold, excurved at vein 4, then oblique and sinuous, a wedge-shaped patch of brown suffusion beyond it on costal area with some whitish points on costa; subterminal line strong, black, incurved on costal area, excurved at vein 4, then oblique, sinuous and closely approximated to the postmedial line, a rather diffused whitish line beyond it; a fine crenulate dark terminal line. Hind wing pale greyish suffused with red-brown, the basal area slightly irrorated with black, the terminal area striated with brown; three indistinct sinuous brown lines beyond the cell faintly defined on outer side by whitish; postmedial line double, black, sinuous, the outer line strong and rather diffused on inner side, somewhat incurved between discal and submedian folds where there is a band of white suffusion beyond it; a slight crenulate dark terminal line; the underside whitish slightly irrorated with brown, a dark discoidal point, traces of a sinuous medial line, a dark postmedial line waved on costal area, and indistinct sinuous subterminal line.

Hab. U.S.A., New York, Center (*Grote*), 2 ♂, 3 ♀, Illinois, Centr. States. *Exp.* 42–46 millim.

8038. **Zale australis,** n. sp. (Plate CCXXX. fig. 13.)

♀. Head and thorax dark reddish brown mixed with some grey; pectus whitish mixed with brown; tarsi black ringed with white; abdomen grey tinged with brown and irrorated with blackish, the ventral surface whitish irrorated with brown. Fore wing grey largely suffused with dark brown and irrorated with blackish; subbasal line black, slightly angled outwards below costa, then oblique and ending at submedian fold; antemedial line black, diffused on outer side, obliquely curved; the medial area with three oblique rather diffused blackish lines; reniform defined on inner side by blackish, its lower part with obscure whitish annulus, narrow, produced at upper extremity; postmedial line black, rather diffused, oblique to below vein 7, then incurved, angled outwards at vein 4, then incurved and slightly sinuous, some white points beyond it on costa; subterminal line blackish, sinuous towards costa, incurved at discal fold, angled outwards below vein 4, then again incurved, a diffused whitish band beyond it with some rufous at middle, the whitish extending to before the subterminal line on inner half; a series of black striæ defined on outer side by whitish before termen.

Hind wing grey suffused with brown and irrorated with black, the costal half of basal area and inner margin paler; three indistinct diffused dark lines beyond the cell; postmedial line black, arising at vein 6; subterminal line slight, dark, somewhat sinuous, a diffused whitish band beyond it with some rufous at middle; a crenulate dark terminal line; the underside whitish irrorated with brown, a dark discoidal lunule, and diffused postmedial line.

Hab. URUGUAY, Monte Video (*J. J. Walker*), 1 ♀ type. *Exp.* 40 millim.

8039. Zale benesignata. (Plate CCXXX. fig. 14.)

Homoptera benesignata, Harv. Bull. Buff. Soc. Nat. Sci. iii. p. 14 (1875); Smith, Cat. Noct. N. Am. p. 371.

♂. Head and thorax red-brown mixed with dark brown and some white, the patagia with obscure white and dark bars; palpi with the 3rd joint blackish tipped with white; pectus whitish tinged with red-brown; legs whitish irrorated with brown, the tarsi black ringed with white; abdomen red-brown, the crests darker, the ventral surface rufous at base and extremity, the medial segments whitish irrorated with brown. Fore wing grey-white mostly suffused with bright rufous and with slight dark irroration, the terminal area striated with brown, the basal area, the areas between the medial lines and between the postmedial and subterminal lines often darker; a slight curved dark subbasal line from costa to submedian fold; antemedial line slight, dark, bent inwards in cell and below vein 1, the area beyond it grey-white to the dark medial line which is incurved in submedian interspace; a blackish point in middle of cell; reniform a narrow blackish lunule defined on outer side by whitish; postmedial line brown, oblique to below vein 7, incurved at discal fold, excurved at vein 4, then incurved and slightly sinuous; subterminal line brown slightly defined on outer side by white, somewhat angled outwards at vein 7, then incurved, angled outwards at vein 4 and slightly at vein 3, then again incurved; a slight crenulate brown terminal line. Hind wing greyish suffused with red-brown, some dark irroration along vein 1, the terminal area with slight dark striæ; traces of two sinuous lines beyond the cell; postmedial line faint, brown, sinuous, excurved and slightly defined on inner side by whitish on inner area; subterminal line blackish slightly defined on outer side by whitish, incurved below discal fold and excurved to tornus; a slight crenulate brown terminal line; the underside white tinged and irrorated with brown, a small blackish discoidal lunule, traces of three sinuous lines on medial area, a rather diffused subterminal line ending on termen at vein 1, and a fine crenulate blackish terminal line.

Hab. CANADA, 1 ♂ type, Montreal (*Couper*), 1 ♂, Bath, 1 ♀; U.S.A., New Hampshire, Florida, Indian R. *Exp.* 44 millim.

*8040. Zale metata. (Plate CCXXX. fig. 15.)

Phœocyma metata, Smith, Pr. U.S. Nat. Mus. xxxv. p. 248 (1909).

♂. Head, thorax, and abdomen pale red-brown; tarsi slightly ringed with white. Fore wing pale red-brown; the basal area tinged with rufous; a curved subbasal black striga from costa; antemedial line fine, blackish, angled outwards below costa, then oblique, sinuous; reniform a narrow black lunule with rufous suffusion beyond it; medial line very indistinct, double, oblique to the reniform, incurved and waved below the cell; postmedial line blackish, excurved below costa, incurved at discal fold, excurved at vein 4, then strongly incurved, some rufous suffusion beyond it below costa; subterminal line blackish, incurved and indistinct to vein 4 where it is angled outwards, then stronger and again incurved; the terminal area with some black striæ. Hind wing pale red-brown, some black scales along vein 1; the medial area with faint traces of three lines; subterminal line almost obsolete towards costa, below vein 6 blackish slightly defined on outer side by whitish and with a rufous band on its inner side, incurved; the terminal area with a few slight black striæ; the underside with slight brown discoidal spot and indistinct sinuous postmedial line.

Hab. U.S.A., New York, cotype in Coll. W. Barnes, Center, Distr. of Columbia, Washington, Pennsylvania, N. Carolina, Tryon, Virginia, Florida. *Exp.* 46 millim. Probably a variety of *Z. obliqua*.

8041. Zale curema. (Plate CCXXX. fig. 16.)

Phœocyma curema, Smith, Pr. U.S. Nat. Mus. xxxv. p. 250 (1909).

♂. Head, thorax, and abdomen dull reddish brown irrorated with a few black scales; tarsi blackish with pale rings. Fore wing dull reddish brown; subbasal line slight, black, curved, from costa to vein 1; antemedial line slight, black, acutely angled outwards below costa, then obliquely curved; reniform a slight blackish lunule; medial line very indistinct, double, oblique from costa to the reniform and incurved below the cell; postmedial line slight, black, excurved below costa, incurved at discal fold, excurved at vein 4, then incurved and slightly sinuous; subterminal line black, obsolescent and waved to vein 4, then stronger and incurved, a white spot beyond it in submedian interspace; a series of faint blackish striæ before termen. Hind wing dull reddish brown, the inner area irrorated with a few black scales; traces of a waved medial line and of an oblique sinuous postmedial line; subterminal line black, almost obsolete towards costa, incurved and slightly defined on outer side by white below vein 6, some white beyond it in submedian interspace; the terminal area with a few black striæ; the underside grey-brown irrorated with red-brown, a slight dark discoidal lunule, traces of a postmedial series of points on the veins and of a curved subterminal line.

Hab. U.S.A., New York, Center (*Bailey*), 1 ♂, Pennsylvania, Missouri, Kirkwood, N. Carolina, Tryon, Florida, Seven Oaks, cotype † in Coll. W. Barnes, Palmbeach. *Exp.* 50 millim. Probably a variety of *Z. obliqua*.

8042. **Zale duplicata.** (Plate CCXXX. fig. 17.)

Homoptera duplicata, Bethune, Can. Journal, x. p. 257 (1856); Smith, Cat. Noct. N. Am. p. 371.
Phœocyma helata, Smith, Pr. U.S. Nat. Mus. xxxv. p. 252 (1909).

Head and thorax rufous mixed with some purplish grey and dark brown; pectus whitish tinged with brown; legs dark brown mixed with grey, the tarsi blackish ringed with white; abdomen rufous, the crests dark at tips. Fore wing grey suffused with red-brown and irrorated with black, the terminal area striated with black; subbasal line black, obliquely curved, from costa to submedian fold; antemedial line black defined on inner side by bright rufous, angled outwards below costa, incurved in cell, and oblique below vein 1; an indistinct double sinuous medial line; a minute black point in middle of cell; reniform a narrow deep black lunule with some whitish suffusion beyond it; postmedial line black, oblique to below vein 7, incurved at discal fold, strongly excurved at vein 4, then incurved and slightly sinuous, some whitish points beyond it on costa; subterminal line black, slightly angled outwards at vein 7, then incurved, angled outwards at vein 4 and slightly at vein 3, then incurved; a terminal series of slight whitish spots. Hind wing greyish suffused with red-brown and irrorated with blackish, the terminal area striated with blackish; faint traces of two lines beyond the cell; postmedial line double, the inner line hardly traceable, the outer black defined on outer side by white, obsolescent towards costa and bent outwards to tornus, a terminal series of faint whitish spots; the underside whitish tinged and thickly irrorated with red-brown, traces of waved postmedial and subterminal lines.

Hab. U.S.A., 1 ♀, Maine, New Hampshire, Webster, Massachusetts, Amherst, New York, Center (*Bailey*, *Grote*), 1 ♂, 2 ♀, Brooklyn, Pennsylvania. *Exp.* 38–46 millim.

*8043. **Zale bethunei.** (Plate CCXXX. fig. 18.)

Phœocyma bethunei, Smith, Pr. U.S. Nat. Mus. xxxv. p. 260 (1909).

Head and thorax dull brown with a reddish tinge; tegulæ with black line at base, fuscous line at middle and blackish line at tips, sometimes defined by white scales or almost obsolete; thorax with two more or less distinct grey lines; abdomen dull brown, the terminal segments sometimes ochreous, the crests distinct. Fore wing dull reddish brown, rather roughly scaled, the basal area rather darker; subbasal line very indistinct, from costa to vein 1; antemedial line blackish, slightly angled outwards below costa and

incurved at vein 1; medial shade dark brown or blackish, erect, sometimes formed by two lines and with some grey irroration before it; reniform a dark lunule with a paler patch beyond it; postmedial line brown or blackish, excurved below costa, incurved at discal fold, excurved at vein 4, then incurved; subterminal line dark, obsolescent on costal half, angled outwards at middle; a slight waved dark terminal line. Hind wing rather paler reddish brown; an indistinct double medial line; postmedial and subterminal lines closely approximated with deeper red-brown between them; a fine waved brown terminal line with slight pale lunules before it. Underside pale yellowish brown; both wings with indistinct discoidal spots, ante-, postmedial, and subterminal lines.

Hab. U.S.A., Maine, Distr. of Columbia, Washington, N. Carolina, Tryon. *Exp.* 31–38 millim. This species is unknown to me, figured from a drawing from type in U.S. Nat. Mus.

Larva. Food-plant, *Pinus*.

8044. **Zale squamularis.** (Plate CCXXX. fig. 19.)

Noctua squamularis, Drury, Ill. Exot. Ins. i. p. 18, pl. ix. f. 3 (1770); Smith, Cat. Noct. N. Am. p. 373.

♂. Head, thorax, and abdomen fuscous mixed with bluish grey; frons with lateral black bars; fore and mid tibiæ banded with blackish, the tarsi black ringed with white. Fore wing fuscous suffused with grey and irrorated with bluish white, some rufous in basal half of submedian interspace and in and beyond end of cell; subbasal line black, curved, from costa to vein 1, a slight oblique blackish shade beyond it; antemedial line black, slightly angled outwards below costa and excurved at median nervure, then oblique and slightly sinuous; medial line rather indistinct, double, dark, slightly angled outwards at subcostal nervure and incurved below the cell, the outer line interrupted by the discoidal lunule formed by rough black and rufous scales, a pale rufous patch beyond it; postmedial line black, obliquely curved to vein 6, incurved at discal fold, angled outwards at vein 4, then strongly incurved and slightly excurved towards inner margin, some whitish points beyond it on costa; subterminal line black slightly defined on outer side by white scales, somewhat excurved at vein 7, excurved at middle, then incurved; a dark shade beyond it at middle and some white in submedian interspace. Hind wing grey-brown slightly irrorated with blackish; an indistinct double oblique medial line from discal fold to inner margin; postmedial line indistinct, arising at vein 6, then obliquely incurved and excurved above inner margin, closely followed by the subterminal line, which is similar, but black defined on outer side by white and ending at tornus; the underside whitish tinged with brown and irrorated with blackish, a blackish discoidal lunule and indistinct sinuous postmedial and subterminal lines.

Hab. Canada, Manitoba, Winnipeg (*Wallis*), 1 ♂; U.S.A., Distr. of Columbia, Washington, Pennsylvania, Maryland. *Exp.* 40 millim.

*8045. Zale largera.

Phæocyma largera, Smith, Pr. U.S. Nat. Mus. xxxv. p. 257 (1909).

Head and thorax brown; tegulæ with darker lines at middle and tips and edged with grey; thorax with alternating grey and brown lines; abdomen brown. Fore wing red-brown suffused with blue-grey; subbasal line brown, diffused on inner side, from costa to vein 1; antemedial line single, brown, irregular diffused, inwardly oblique; medial shade distinct, defined on inner side by a slightly sinuous blackish line, diffused on outer; orbicular a black point, reniform a very distinct narrow blackish lunule, sometimes defined on inner side by pale scales and followed by reddish shading; postmedial line single, brown, excurved below costa, incurved at discal fold, excurved at vein 4, then incurved; subterminal line brown, diffused, defined on inner side by black scales, angled outwards at veins 4, 3; a fine brown terminal line. Hind wing fuscous brown, paler at base; traces of a double oblique medial line arising at discal fold; postmedial and subterminal lines closely approximated and brown or blackish; a greyish mark at tornus and irregular terminal line defining greyish lunules. Underside ochreous brown; both wings with dark discoidal lunules and postmedial and subterminal lines.

Hab. CANADA, Manitoba, Winnipeg, Vancouver I. *Exp.* 45 millim. This species is unknown to me; probably a variety of *Z. obliqua*.

8046. Zale obliqua. (Plate CCXXX. fig. 20.)

Homoptera obliqua, Guen. Noct. iii. p. 16, pl. 15. f. 7 (1852); Smith, Cat. Noct. N. Am. p. 371.

Head, thorax, and abdomen purple-grey mixed with reddish brown; tarsi black ringed with white. Fore wing purple-grey tinged in parts with red-brown and irrorated with black, the terminal area striated with blackish; a slight oblique black subbasal line from costa to submedian fold; antemedial line slight, blackish, acutely angled outwards below costa and oblique towards inner margin; a double rather diffused sinuous medial red-brown line, somewhat angled outwards at the veins; a minute red-brown spot in middle of cell; reniform a narrow red-brown lunule on the outer medial line with a patch of rufous suffusion beyond it; postmedial line brown, excurved below costa, incurved at discal fold, slightly angled outwards at veins 4, 3, then incurved and sinuous; subterminal line red-brown and incurved to vein 4, then black, angled outwards at vein 4 and slightly at vein 3, then incurved. Hind wing purple-grey tinged with red-brown, the inner area slightly irrorated with black, the terminal area striated with blackish; traces of two sinuous lines beyond the cell; postmedial line double, arising at vein 6, slightly sinuous, the outer line black below vein 2; the underside purple-grey tinged and irrorated with red-brown, faint traces of two medial lines and of postmedial and subterminal lines.

Ab. 1. Fore wing with white subterminal spot in submedian interspace.

Hab. CANADA; U.S.A., Eastern States, 1 ♂, 1 ♀, New York, Long I., Center (*Bailey*), 1 ♂, 1 ♀. Distr. of Columbia, Pennsylvania, Florida, Missouri. *Exp.* 46–50 millim.

SECT. II. (*Zale.*) Femora of male not fringed with long hair, the mid femora normal.

A. Fore wing not black to the subterminal line.
  a. Fore wing without dark striæ.
    a^1. Fore wing with the subterminal line excurved at middle ..... *rubiata.*
    b^1. Fore wing with the subterminal line angled outwards at middle.
      a^2. Fore wing nearly uniform brown ..... *rubi.*
      b^2. Fore wing grey suffused with fuscous ..... *yavapai.*
  b. Fore wing with slight brown striæ ..... *colorado.*
  c. Fore wing with prominent blackish striæ.
    a^1. Fore wing not suffused with black from the medial to the subterminal lines ..... *cingulifera.*
    b^1. Fore wing suffused with black from the medial to the subterminal lines ..... *calycanthata.*
B. Fore wing black to the subterminal line ..... *horrida.*

*8047. Zale rubiata. (Plate CCXXXI. fig. 1 ♂, 2 ♀.)

Phœocyma rubiata, Smith, Pr. U.S. Nat. Mus. xxxv. p. 265 (1909).

♂. Head and thorax whitish suffused with pale red-brown; tegulæ with black line near base; abdomen whitish tinged with pale red-brown and with fine black segmental lines, the crests darker. Fore wing whitish suffused with bright rufous, leaving a band beyond the antemedial line and the terminal area except at costa whitish; subbasal line indistinct, double, sinuous, extending to inner margin; antemedial line treble, sinuous, oblique below submedian fold; some black striæ on medial part of costa and an indistinct oblique double sinuous medial line; reniform a narrow lunule with whitish annulus, its centre greyish defined by black; postmedial line slight, double, blackish, excurved below costa, incurved at discal fold, excurved at vein 4, then oblique and slightly sinuous; subterminal line double, filled in with whitish, the inner line black, the outer rufous, oblique and sinuous from costa near apex to discal fold, excurved at vein 4, then incurved and sinuous; a series of black points before termen and a fine waved black terminal line. Hind wing whitish faintly tinged with red-brown, the basal half irrorated with blackish; the medial area with three sinuous brown lines; postmedial line fine, black, sinuous, incurved at vein 2, a narrow rufous band between it and the subterminal line, which is black, sinuous, incurved at vein 2, followed by a slight rufous line; some rufous marks just before termen and a fine crenulate black terminal line; a whitish line at base of cilia; the underside white slightly irrorated with brown, a minute black discoidal annulus, indistinct sinuous postmedial and subterminal lines, and a series of black points before termen.

♀. Grey-brown with a slight reddish tinge, and without the rufous and whitish shades.

Hab. U.S.A., Arizona, cotypes † ♂ ♀ in Coll. W. Barnes, Phœnix, Nogales. *Exp.* 40 millim.

8048. **Zale rubi.** (Plate CCXXX. fig. 21.)

Homoptera rubi, H. Edw. Papilio, i. p. 28 (1881); Smith, Cat. Noct. N. Am. p. 369.

♀. Head and thorax red-brown mixed with greyish; tegulæ with black line near base; tarsi blackish with pale rings; abdomen red-brown tinged with grey, the crests whitish at base, fuscous at tips. Fore wing red-brown tinged with grey; a slight obliquely curved blackish subbasal line from costa to submedian fold; antemedial line slight, blackish, oblique, somewhat incurved in cell and excurved just below it; the medial area with faint traces of sinuous lines and slight blackish striæ from costa; reniform hardly traceable; postmedial line black, oblique to below vein 7, then incurved, excurved at vein 4, then oblique and slightly sinuous; subterminal line strong, black, oblique to discal fold, slightly angled outwards below vein 5 and strongly below vein 4, then incurved; a series of minute blackish points before termen; a fine waved dark terminal line and white line at base of cilia. Hind wing red-brown tinged with grey, the basal half irrorated with dark brown; three indistinct sinuous brown lines beyond the cell; postmedial line black, sinuous; subterminal line rather stronger, black, oblique, sinuous, closely approximated to the postmedial line below vein 6 and angled outwards to tornus; a series of blackish points before termen; a fine waved dark terminal line, and white line at base of cilia; the underside grey suffused with reddish brown and slightly irrorated with dark brown, a small dark discoidal spot, slight minutely waved postmedial line, and faint subterminal line.

Hab. U.S.A., California, Shasta Co., Cowsprings (*Walsingham*), 2 ♀, Siskiyou Co., Soda Springs, Yosemite Valley. *Exp.* 44 millim.

8049. **Zale yavapai.** (Plate CCXXXI. fig. 3.)

Phœocyma yavapai, Smith, Pr. U.S. Nat. Mus. xxxv. p. 267 (1909).

♀. Head and thorax brown mixed with grey and fuscous; tegulæ with black line near base; tarsi blackish with pale rings; abdomen grey suffused with brown, the crests blackish. Fore wing grey suffused with fuscous brown and irrorated with blackish; subbasal line black, sinuous, from costa to vein 1, a small black spot beyond it on median nervure and another above inner margin; antemedial line double, blackish, filled in with red-brown below the cell, inwardly oblique, waved, a faint sinuous line beyond it and a curved medial shade; reniform a narrow lunule defined by blackish; postmedial line black slightly defined on outer side by whitish, excurved below costa, incurved at discal fold, excurved at vein 4, then oblique

and sinuous; subterminal line black defined on outer side by whitish, arising from costa near apex and obliquely incurved, angled outwards at vein 4, then again obliquely incurved, a slight dark shade beyond it; the terminal area with a few black striæ; cilia with a fine whitish line at base followed by a dark line. Hind wing grey suffused with brown and irrorated with blackish; the medial area with three indistinct lines; postmedial line fine, black, slightly sinuous, closely approximated to the stronger slightly sinuous black subterminal line which is followed by a slight dark shade; the terminal area with a few black striæ; a fine whitish line at base of cilia; the underside grey irrorated with brown, a dark discoidal point, traces of a postmedial line and a waved black terminal line.

Hab. U.S.A., Colorado, Glenwood Springs, Arizona, Yavapai Co., cotype † in Coll. W. Barnes, Prescott (*Kunzé*), 2 ♀. *Exp.* 38–40 millim.

*8050. Zale colorado. (Plate CCXXXI. fig. 4 ♂, 5 ♀.)

Phæocyma colorado, Smith, Pr. U.S. Nat. Mus. xxxv. p. 263 (1909).

♂. Head and thorax red-brown mixed with blackish and some white scales; tegulæ with black line near base; tarsi ringed with white; abdomen dark reddish brown mixed with whitish, the crests tipped with whitish. Fore wing with the basal area dark brown mixed with some grey; subbasal line black, sinuous, from costa to vein 1, an oblique black striga beyond it below the cell; antemedial line double, black, sinuous, oblique below submedian fold; medial area striated with brown, its inner half bluish white, its outer half bright red-brown; an indistinct treble sinuous brown medial line; reniform a black-brown lunule defined by black; postmedial line double, black, the outer line slight, excurved below costa, incurved at discal fold, excurved at vein 4, then strongly incurved; subterminal line double, the inner line black, the outer red-brown, oblique from costa towards apex to vein 5, excurved at vein 4, then incurved; the terminal area bluish white with some black striæ towards termen; a fine crenulate black terminal line; cilia reddish brown with a fine whitish line at base and slight blackish spots at middle. Hind wing greyish suffused with red-brown and slightly irrorated with blackish, the terminal area striated with brown; the medial area with three indistinct sinuous brown lines; postmedial line fine, black, slightly sinuous, closely approximated to the minutely waved black subterminal line, incurved below vein 6; a crenulate black terminal line; cilia with a whitish line at base and slight dark spots at middle; the underside grey suffused and irrorated with red-brown, a brown discoidal spot, oblique medial line, slightly waved postmedial line excurved below costa, and indistinct subterminal line.

♀. Fore wing grey-brown with a slight reddish tinge, without the red-brown and bluish white shades.

Hab. CANADA, Manitoba; U.S.A., Texas, Colorado, Glenwood Springs, cotypes † ♂ ♀ in Coll. W. Barnes, Denver, Arizona, Palmerlee, Williams. *Exp.* 44 millim.

8051. Zale cingulifera. (Plate CCXXXI. fig. 6.)

Phœocyma lunifera, Guen. Noct. iii. p. 3, pl. 15. f. 9 (nec Hübn.).
Homoptera cingulifera, Wlk. xiii. 1056 (1857); Smith, Cat. Noct. N. Am. p. 370.
Homoptera intenta, Wlk. xiii. 1070 (1857).
Homoptera woodii, Grote, Can. Ent ix. p. 88 (1877).

Head and thorax red-brown mixed with grey and some blackish; tegulæ with black line near base and whitish tips; tarsi blackish ringed with white; abdomen grey tinged with red-brown and slightly irrorated with blackish, the crests fuscous tipped with whitish. Fore wing grey tinged with brown and with numerous striated black-brown lines; the basal area suffused with dark brown; a curved black subbasal striga from costa; antemedial line rather diffused, black, incurved below submedian fold; the area from middle of wing to the subterminal line suffused with dark brown extending obliquely to apex; reniform a narrow lunule defined by white; postmedial line black, oblique to below vein 7 where it is angled outwards, then incurved, excurved at vein 4, then oblique and sinuous, some white points beyond it on costa; subterminal line indistinct, dark, excurved below costa, then incurved, excurved at middle, then again incurved. Hind wing grey suffused with red-brown and irrorated with dark brown, the terminal area striated with black-brown; an indistinct double brown medial line; postmedial line indistinct, blackish, oblique; the underside whitish tinged with red-brown and irrorated with dark brown, a slight curved postmedial line.

Hab. U.S.A., 2 ♂ types *intenta* and *woodii*, Maine, New Hampshire, New York, Center (*Bailey*), 1 ♂, Pennsylvania, Wisconsin, Florida (*Doubleday*), 1 ♀ type. *Exp.* 40–48 millim.

8052. Zale calycanthata. (Plate CCXXXI. fig. 7.)

Phalæna calycanthata, Smith & Abb. Ins. Georgia, ii. p. 207, pl. 104 (1797); Smith, Cat. Noct. N. Am. p. 370.
Homoptera uniformis, Morr. Can. Ent. vii. p. 148 (1875); Smith, Cat. Noct. N. Am. p. 371.

Head and thorax black-brown mixed with some red-brown and whitish and slightly glossed with leaden grey; tegulæ with black line near base; tarsi blackish ringed with white; abdomen dark reddish brown slightly mixed with grey. Fore wing red-brown suffused and striated with black-brown to the subterminal line, the terminal area with more or less white faintly striated with red-brown and suffused with red-brown at termen; a double curved black subbasal line from costa to submedian fold, filled in and defined on inner side faintly by whitish, antemedial line black, slightly sinuous, oblique below submedian fold, some whitish

suffusion beyond it; traces of a double sinuous dark medial line; reniform black-brown with a slight leaden grey gloss and faintly defined on outer side by whitish; postmedial line very indistinct, blackish, oblique to vein 7 where it is angled outwards, then incurved, excurved at vein 4, then oblique and sinuous; subterminal line black, slightly angled outwards at vein 7, then incurved, angled outwards below vein 4, then strongly incurved and slightly sinuous, defined on outer side by red-brown before the white terminal area; a fine waved blackish terminal line. Hind wing red-brown tinged with grey and irrorated with dark brown, the terminal area with more or less white striated with brown and suffused with brown at termen; three indistinct sinuous brown lines beyond the cell; postmedial line slight, blackish, sinuous; subterminal line black slightly defined on outer side by whitish, obsolescent towards costa, incurved and slightly waved below vein 6, some brown beyond it before the white terminal area; a crenulate black terminal line; the underside whitish suffused and striated with red-brown, a black discoidal spot, traces of two sinuous medial lines, a sinuous postmedial line, and traces of a subterminal line.

Ab. 1. Wings without white beyond the subterminal line.

Hab. U.S.A., Virginia, N. Carolina, Georgia, 2 ♂, 2 ♀, Florida. *Exp.* 48–54 millim.

Larva. Ash-grey shaded with white and blackish, the lines black; subdorsal line double, interrupted on the 4th and 5th somites; stigmatal line defined above by waved black streaks; 4th and 5th somites with some yellow in the incisures; 2nd to 6th somites with some blackish patches; ventral surface with some white; 11th somite with pair of oblique dorsal prominences. Food-plants: *Calycanthus floridus* and Oak. 4.

8053. Zale horrida.

Zale horrida, Hübn. Zutr. Ex. Schmett. i. p. 11, ff. 31, 32 (1818); Smith, Cat. Noct. N. Am. p. 367.

Head and thorax fuscous black, the tips of patagia and metathorax rufous; pectus with some grey; tarsi black ringed with white; abdomen fuscous tinged with grey. Fore wing fuscous black sparsely irrorated with black-tipped grey scales to the postmedial line and on costal area to the subterminal line, the terminal area rufous finely pencilled with black; a curved rufous subbasal striga from costa; antemedial line double, black, filled in with rufous at costa, slightly angled outwards below costa and incurved below submedian fold; traces of two waved medial lines; reniform slightly defined by black; postmedial line black, double and filled in with rufous towards costa, oblique and sinuous to below vein 7, incurved at discal fold, excurved at vein 4, then strongly incurved and slightly sinuous, some whitish points beyond it on costa; subterminal line red-brown on a very narrow whitish band, bent inwards from below vein 7 to close to the postmedial line, then defining its

outer edge and minutely dentate; a faint crenulate dark terminal line. Hind wing fuscous slightly irrorated with black scales, the terminal area rufous finely pencilled with black; postmedial line indistinct, black, slightly sinuous, obsolescent on costal area; subterminal line whitish slightly defined on inner side by black, dentate,

Fig. 57.—*Zale horrida*, ♂. ½.

arising at vein 6; the underside grey suffused with red-brown and irrorated with dark brown, a slight blackish discoidal lunule, traces of an antemedial and two medial lines, a slight waved postmedial line.

Hab. Canada (*Norman*), 1 ♀; U.S.A., Eastern States to Texas and west to the Rocky Mts., 1 ♂, 3 ♀, New York (*Fuchs*), 1 ♂. *Exp.* 42–46 millim.

Genus **SYPNOIDES**, nov.

Type, *S. pannosa*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and broadly scaled, the 3rd long and thickly scaled; frons smooth, with tuft of hair above; eyes large, round; antennæ of male typically with fasciculate cilia; thorax clothed almost entirely with scales, the pro- and metathorax with large spreading crests; tibiæ slightly fringed with hair, the fore tibiæ not spined, the hind tibiæ spined; abdomen with dorsal series of crests. Fore wing with the apex rounded, the termen evenly curved and crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate, with long branches, the apex ciliated.

A. Fore wing with white suffusion on medial area, the basal and terminal areas without blackish patches ..... *equatorialis.*
B. Fore wing without white suffusion on medial area, the basal and terminal areas with blackish patches ..... *mandarina.*

8054. Sypnoides equatorialis.

Sypna equatorialis, Holl. Psyche, vii. p. 69 (1894).

♂. Head and thorax red-brown mixed with some whitish; tarsi blackish ringed with white; abdomen grey-brown, the crests dark brown, the ventral surface whitish. Fore wing reddish brown slightly irrorated with black; a reddish ochreous subbasal bar from costa to median nervure and white bar in submedian interspace; medial area suffused with bluish white with a conical black-brown patch on it from costa to middle of cell and an oblique band from median nervure to inner margin towards which it expands; traces of a curved waved antemedial brown line on the white area;

Fig. 58.—*Sypnoides equatorialis*, ♂. ½.

orbicular a minute incomplete black annulus; reniform with reddish brown centre and bluish white annulus, oblique, its outer edge irregular; postmedial line indistinctly double, obliquely downcurved below costa, then slightly waved, somewhat incurved at discal fold, incurved below vein 4, and obsolete on the white area, a dark brown spot beyond it on costa followed by some pale and dark striæ; subterminal line black-brown defined on inner side by reddish ochreous, waved, oblique towards costa and excurved at middle; a series of slight black lunules before termen, the lunule in submedian interspace defined on outer side by white scales; a fine waved dark terminal line. Hind wing reddish brown; traces of a double medial line filled in with whitish on inner area; an indistinct diffused postmedial line with some dark points on its outer side on inner area; an indistinct dark subterminal line, more distinct and somewhat dentate on inner half; a series of dark points and lunules before termen; a fine waved dark terminal line and pale line at base of cilia; the underside whitish thickly irrorated with brown,

a discoidal lunule filled in with whitish, dark medial line waved to vein 5 and oblique below vein 2, broad dark shade before the indistinct double postmedial line filled in with whitish, and series of blackish points before termen.

Hab. Gold Coast, Ashanti, Obuassi (*Bergman*), 1 ♂; S. Nigeria, Ilesha (*Humfrey*), 1 ♂; Gaboon, Ogové R., type † in Coll. Holland. *Exp.* 52–54 millim.

8055. **Sypnoides mandarina.** (Plate CCXXXI. fig. 8.)

Sypna mandarina, Leech, Trans. Ent. Soc. 1900, p. 545.

♂. Head and base of tegulæ red-brown; thorax black-brown with some blue-grey scales; antennæ and palpi dark brown; pectus and legs greyish brown, the tibiæ with blackish bands, the fore and mid tarsi black ringed with whitish; abdomen reddish brown with slight dark irroration, the crests tipped with blackish, the anal tuft dark brown. Fore wing pale red-brown, the medial area pencilled with black scales except towards costa, the basal area black with a leaden grey tinge; a slight black subbasal line defined on outer side by red-brown from costa to vein 1; the black area defined by the double inwardly oblique medial line, the inner line black, the outer faint and red-brown, with a slight blackish spot at costa; reniform faint, pale, an oblique brown bar above it from costa; postmedial line very indistinct, double, brown, excurved to vein 4, then oblique and sinuous; a conical blackish patch tinged with leaden grey from costa before apex, its edges sinuous and defined by blackish, some whitish points on it at costa; a large terminal blackish patch tinged with leaden grey from above vein 3 to tornus, its inner edge sinuous and defined by black, the cilia beyond it blackish; a series of black points before termen. Hind wing grey-brown with slight dark irroration; two diffused sinuous brown subterminal lines, the outer line black and waved from vein 4 to inner margin with a blackish patch tinged with leaden grey beyond it with a small white spot on it at submedian fold, the cilia beyond it mixed with blackish; a series of black points before termen. Underside whitish tinged and irrorated with brown; fore wing with two diffused rather oblique brown postmedial lines and a dark subterminal shade broad towards costa; hind wing with two small black discoidal lunules, postmedial line slight, angled outwards at discal fold, then oblique, a slight dark subterminal shade.

Hab. W. China, Chou-pin-sa, 5 ♂ type, Kia-ting-fu, 1 ♂, Ta-chien-lu, 1 ♂. *Exp.* 48–58 millim.

Sect. II. Antennæ of male with fasciculate cilia.

8056. **Sypnoides pannosa.**

Sypna pannosa, Moore, Lep. Atk. p. 168, pl. v. f. 12 (1882); Hmpsn. Moths Ind. ii. p. 451.

Head and thorax black-brown tinged with leaden grey; palpi

with red-brown mixed; pectus and legs brown mixed with greyish, the tarsi dark brown with pale rings; abdomen pale red-brown, the crests and extremity dark brown. Fore wing ochreous tinged with red-brown and thickly pencilled with deep red-brown scales; basal area black-brown tinged with leaden grey; subbasal line slight, double, dark filled in with reddish ochreous, from costa to submedian fold; antemedial line double, red-brown filled in with reddish ochreous and defined on outer side by ochreous, inwardly oblique and slightly angled inwards at vein 1; an oblique diffused

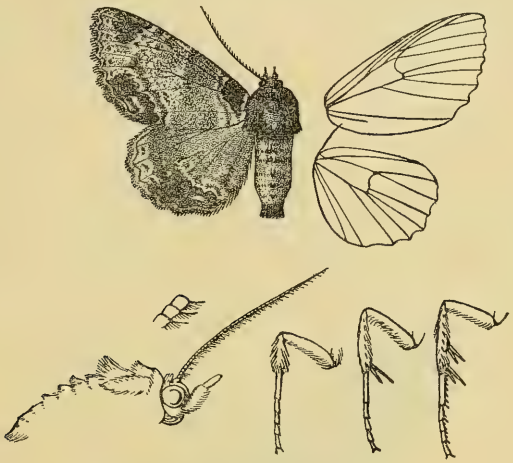


Fig. 59.—*Sypnoides pannosa*, ♂. ½.

sinuous brown medial line; postmedial line indistinct, red-brown filled in with ochreous, oblique towards costa and incurved below vein 4; subterminal line diffused, ochreous, curved, a triangular black-brown patch tinged with leaden grey beyond it on costal area and the area beyond it from above vein 3 black-brown tinged with leaden grey. Hind wing ochreous suffused with brown, the postmedial area irrorated with red-brown on inner half; indistinct double postmedial and subterminal lines almost obsolete on costal half, the area beyond the latter black-brown tinged with leaden grey below vein 4; a series of small dark spots before termen; the underside ochreous white irrorated with brown, a diffused medial line excurved beyond the cell and waved postmedial line both obsolete below submedian fold, and series of dark points before termen.

Hab. Punjab, Kulu, Sultanpur (*G. Young*, *Hocking*), 3 ♂, 2 ♀, Dharmsála (*Hocking*), 1 ♂, 1 ♀, Simla (*Harford*), 1 ♀; Assam, Khásis (*Badgley*), 1 ♂. *Exp.* 52–64 millim.

Genus **TOLNAODES**, nov.

Type, *T. dasynota*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and rather slenderly scaled, the 3rd long; frons smooth; eyes large, round; antennæ of male with fasciculate cilia; termen clothed with hair and hair-like scales, the prothorax without crest, the metathorax with spreading crest; tibiæ fringed with rather long hair, the fore and hind tibiæ not spined; pectus with a tuft of long hair from below origin of fore wing; abdomen with dorsal series of crests. Fore wing with the apex rounded, the termen evenly curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about one-third length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

8057. **Tolnaodes dasynota.**

Achæa dasynota, Feld. Reis. Nov. pl. 112. f. 10 (1874).

♂. Head and thorax red-brown, the metathorax dark brown; antennæ blackish; palpi blackish with a white line in front; frons blackish with a white patch below; pectus, legs, and abdomen black-brown, the tarsi ringed with white, the tuft of hair from

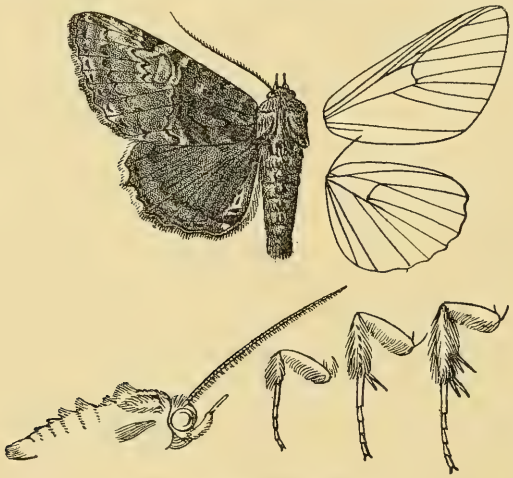


Fig. 60.—*Tolnaodes dasynota*, ♂. ½.

origin of fore wing rufous. Fore wing with the basal half grey-brown irrorated with dark brown, the terminal half pale red-brown; subbasal line black slightly defined on each side by whitish, incurved in cell and ending at submedian fold; antemedial line strong, black, waved, excurved in submedian interspace; a small blackish spot in middle of cell; reniform slightly defined by blackish,

narrowing above and with some whitish in outer part of centre; two strong waved blackish medial lines, followed by an oblique dark bar from costa and slight line before the reniform; postmedial line with black-brown patch at costa defined on each side by whitish, irregularly waved to vein 4, then bent inwards to lower angle of cell and oblique and sinuous to inner margin; some whitish points on postmedial part of costa; a waved red-brown subterminal line; a series of black striæ before termen and slight waved black terminal line; cilia dark brown. Hind wing dark brown with a slight greyish gloss; some pale reddish marks on vein 1 towards tornus; a minutely waved blackish subterminal line defined on outer side by slight whitish marks towards tornus; a series of black striæ before termen slightly defined by reddish; a waved black terminal line; cilia white from apex to vein 4 intersected by dark streaks at veins 7, 6. Underside fuscous, the costal and terminal area of fore wing and the hind wing irrorated with white; fore wing with diffused oblique blackish medial line, discoidal spot, postmedial band incurved below discal fold and slightly defined on outer side by whitish, subterminal white bar from costa and white patches on termen and cilia at vein 5 and between vein 3 and submedian fold; hind wing with sinuous medial black line, discoidal bar, postmedial slightly sinuous band defined on outer side by whitish and some white on termen at apex, middle, and between vein 3 and submedian fold.

Hab. Colombia, Sierra del Libane, 1 ♂; Fr. Guiana. *Exp.* 62 millim.

Genus **HYPOGRAMMODES**, nov.

Type, *H. abscondens.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to well above vertex of head and slenderly scaled, the 3rd long; frons smooth; eyes large, round; antennæ of male with fasciculate cilia; thorax clothed with scales and hair mixed, the metathorax with spreading crest; fore tibiæ broadly fringed with hair, the mid and hind tibiæ moderately fringed with hair, the mid tibiæ of male dilated with a groove containing a tuft of hair, the fore and hind tibiæ not spined; abdomen with dorsal ridges of hair on basal segments but without crests. Fore wing rather long and narrow, the apex somewhat produced, the termen evenly curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell nearly half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Hind wing with white apical patch.
  a. Fore wing with black spot on termen below apex ..... *abscondens.*
  b. Fore wing with small black spot before termen below apex. *confusa.*
B. Hind wing without white apical patch.
  a. Hind wing with pale band beyond the postmedial line.
    a^1. Fore wing with blackish patches on medial area in submedian interspace and beyond the cell ..... *æolia.*
    b^1. Fore wing without blackish patches on medial area in submedian interspace and beyond the cell. ..... *feronia.*

b. Hind wing without pale band beyond the postmedial line.
*a*¹. Hind wing with dark spot with white point on its inner edge on termen below apex ..... *micropis*.
*b*¹. Hind wing without dark spot with white point on its inner edge on termen below apex.
*a*². Fore wing with blackish spot defined above and below by minute white streaks on termen below apex.
*a*³. Fore wing with white point on the inner edge of the subapical blackish spot; hind wing with series of white points before termen ..... *subocellata*.
*b*³. Fore wing without white point on the inner edge of the subapical blackish spot; hind wing without series of white points before termen ..... *glauca*.
*b*². Fore wing without blackish spot defined above and below by minute white streaks on termen below apex *glaucoides*.

8058. **Hypogrammodes abscondens.**

Cœnipeta abscondens, Wlk. xiii. 1094 (1857).
Hypogramma sublucida, Wlk. xiii. 1097 (1857).

Head and thorax red-brown mixed with some grey; tegulæ whitish at tips; palpi black-brown with two fine white streaks in front; sides of frons with white streaks; pectus, legs, and ventral surface of abdomen white slightly mixed with brown, the tarsi dark brown ringed with white. Fore wing red-brown, the basal area slightly irrorated with white, the rest of wing thickly irrorated with blue-white; subbasal line dark brown, excurved below costa

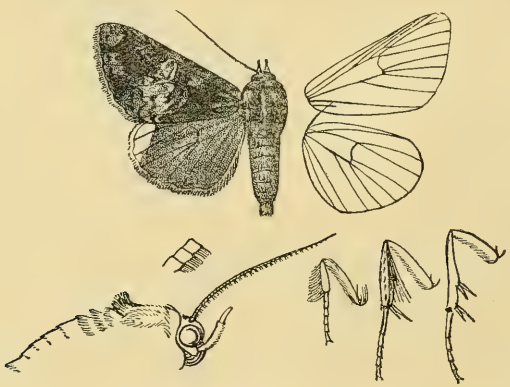


Fig. 61.—*Hypogrammodes abscondens*, ♂. ½.

and ending at median nervure; antemedial line dark brown, sinuous, oblique from costa to submedian fold where it is angled outwards, then erect; an indistinct oblique waved brown medial line; an oblique white shade tinged with red-brown from costa above end of cell to submedian fold at subterminal line, the reniform with its centre indistinctly defined by red-brown being placed on it; post-medial line dark brown, forming a spot at costa, oblique to below

vein 7, then inwardly oblique with a dark patch on its inner side at discal fold, at vein 3 bent inwards to lower angle of cell, then oblique and sinuous; the postmedial costal area mostly red-brown with some white points on costa; subterminal line brown, slightly waved, angled outwards below vein 7, then strong black-brown and oblique to vein 5, slightly excurved at middle and incurved below vein 4; a black spot on termen below apex and series of black striæ before termen; a slight waved dark terminal line and fine whitish line at base of cilia. Hind wing black-brown, the basal and inner areas reddish brown; a pure white apical patch extending to vein 5 and with its inner edge sinuous, followed by a faint blackish line before termen and fine pale line at base of cilia. Underside of both wings black-brown with the basal area blue-grey; fore wing with oblique white band from costa above end of cell to tornus towards which it expands, and with some whitish marks on costa before and beyond it, a white apical patch; hind wing with narrow dark discoidal lunule with pale centre, double curved medial line except on inner area, and oblique sinuous postmedial line.

Hab. Trinidad, Caparo (*Kaye*), 1 ♀; Br. Guiana, Demerara (*Rodway*), 1 ♀, Potaro R. (*Roberts*), 1 ♂; Brazil, 1 ♂ type *sublucida*, Amazons. *Exp.* 50–60 millim.

8059. **Hypogrammodes confusa.** (Plate CCXXXI. fig. 9.)

Peosina numeria, Wlk. xiv. 1243 (part.), nec Drury.
Hypogramma confusa, Butl. P. Z. S. 1878, p. 487.

♂. Head and thorax bright red-brown, the tegulæ slightly edged with grey, the patagia with curved grey bars and grey tips; palpi white at base, then black-brown in front with two fine white lines; frons and basal joint of antennæ with white lines at sides; pectus and femora white, the tibiæ whitish and red-brown, the tarsi blackish ringed with white; abdomen greyish brown, the ventral surface whitish tinged with brown. Fore wing bright red-brown mixed with purple and irrorated with pale yellow-green scales; a slight double sinuous grey subbasal line from costa to submedian fold; antemedial line indistinctly double from costa to median nervure, oblique, sinuous, excurved below median nervure; an indistinct double oblique sinuous medial line with a band of whitish suffusion beyond it; postmedial line indistinct, double, waved and somewhat oblique to vein 3, then retracted to lower angle of cell and again oblique and waved, some whitish points beyond it on costa; subterminal line very indistinct, pale, defined on inner side by small black spots between veins 7 and 4, excurved below vein 7, then oblique to discal fold, excurved at middle, then again incurved; a small black spot below apex, then a series of small lunules before termen, a slight waved dark terminal line and fine pale line at base of cilia. Hind wing black-brown with large white apical patch extending to discal fold; the cilia white to vein 5 on the extremity of which there is a minute white streak, then a series of black

striæ defined on outer side by pale brown to submedian fold; a fine pale line at base of cilia. Underside of fore wing dark brown with broad white band from middle of costa to tornus with slight pale marks on each side of it on the costa, a white apical patch extending to below vein 5; hind wing grey-brown with slight dark discoidal lunule and double curved postmedial line.

Hab. Venezuela (*Dyson*), 1 ♂ type. *Exp.* 64 millim.

8060. Hypogrammodes æolia.

Cœnipeta æolia, Druce, Biol. Centr.-Am., Het. i. p. 350, pl. 31. f. 9 (1890).

♀. Head and thorax brown mixed with grey; palpi whitish at base; tibiæ banded with fuscous, the tarsi fuscous ringed with whitish; abdomen grey-brown, the ventral surface whitish. Fore wing grey with a violaceous tinge suffused in parts with red-brown; subbasal line double, brown, curved, from costa to submedian fold; antemedial line black with a brown line before it, curved and somewhat dentate, expanding at costa, a black patch between it and the postmedial line in submedian interspace; medial area irrorated with some red and a few pale blue-green scales; reniform red defined by black and with a pale lunule in centre, a black patch beyond it extending to the postmedial line; two oblique blackish striæ from middle of costa and an oblique waved line from lower angle of cell to inner margin; postmedial line black defined on outer side by whitish towards costa where it expands, waved, excurved to vein 4, then incurved; a waved red-brown shade beyond it and some white points on costa with blackish streaks between them; subterminal line rather diffused, double, waved, brown filled in with whitish, a black spot on its inner side below vein 7 and some black-brown suffusion before and beyond it at middle; a small black subapical spot and a slight waved blackish terminal line. Hind wing grey suffused with brown; a sinuous blackish postmedial line with brownish white band beyond it except towards costa; a sinuous black-brown subterminal band, diffused to termen on apical area; a waved dark terminal line; cilia ochreous white; the underside with small discoidal lunule defined by blackish, two medial lines angled outwards at discal and submedian folds, and a broad dark subterminal shade.

Hab. Mexico, Tabasco, Teapa (*H. H. Smith*), 1 ♀ type. *Exp.* 44 millim.

8061. Hypogrammodes feronia.

Cœnipeta feronia, Feld. Reis. Nov. pl. 112. f. 7 (1874); Druce, Biol. Centr.-Am., Het. i. p. 350.

Head and thorax red-brown; inner side and tips of palpi and lower part of frons whitish; pectus and legs red-brown and whitish, the tarsi blackish ringed with white; abdomen grey-brown tinged with red-brown and with slight pale segmental lines, the ventral

surface pale red-brown. Fore wing red-brown mixed with blue-white; subbasal line double, dark brown filled in with whitish, curved, from costa to vein 1; a curved dark reddish brown antemedial band with waved edges and a waved blue-grey line on it from costa to median nervure; a waved red-brown medial line, distinct and obscurely double towards costa; reniform a dark red-brown spot with slight whitish lunule in centre; postmedial line dark reddish brown, defined on outer side by white at costa, oblique to below vein 7, then waved, bent inwards at vein 3, then oblique; some white points on costa towards apex; subterminal line formed of small dentate dark reddish brown spots and a larger spot angled outwards below vein 7, defined on each side by rather obscure waved blue-white lines; a waved dark brown line before termen forming lunules in the interspaces; cilia chequered dark brown and whitish. Hind wing dark red-brown; a diffused blackish postmedial line angled outwards at discal and submedian folds defined between those points and towards tornus by a narrow orange-yellow band; a slight waved yellow subterminal line from above vein 3 to below 2; some yellow marks on termen between veins 6 and 2; cilia chequered brown and whitish; the underside grey tinged with red-brown, a dark discoidal lunule with pale centre, two dark medial lines oblique to discal fold then sinuous, the terminal area suffused with black-brown with small whitish patch at apex.

Hab. Mexico, Jalapa (*Trujillo*), 1 ♂; Panama, Bugaba (*Champion*), 1 ♂, Godman-Salvin Coll., Cana Mines (*Tylecote*), 1 ♀, La Chorrera (*Dolby-Tyler*), 2 ♀; Br. Guiana, Demerara (*Rodway*), 2 ♀, Bartica (*Kaye*), 1 ♀, Potaro R. (*Kaye*); Brazil, Amazons. *Exp.* 40–50 millim.

8062. **Hypogrammodes micropis**, n. sp. (Plate CCXXXI. fig. 10.)

♂. Head and thorax chocolate-brown mixed with some grey, the tegulæ pale at tips; palpi black with two fine white streaks in front; pectus and legs rufous, the tibiæ and tarsi banded with chocolate-brown; abdomen red-brown. Fore wing greyish tinged with red-brown and irrorated in parts with blue-white; a red-brown subbasal bar from costa to median nervure; antemedial line greyish rather broadly defined on each side by bright red-brown, oblique, sinuous; two sinuous bright red-brown medial lines, the area before them in cell, beyond the cell and below end of cell suffused with bright red-brown; reniform with bluish white centre defined by red-brown and greyish annulus; postmedial line greyish defined on each side by bright red-brown, waved, oblique from vein 6 to below end of cell, then erect; subterminal line greyish defined on inner side by a broad band of bright red-brown and on outer side by red-brown, waved, excurved below vein 7 and at middle; a round black subapical spot followed by a series of red-brown lunulate spots before termen; a red-brown terminal line; cilia black-brown with a pale reddish line at base. Hind wing deep red-brown; an indistinct sinuous brown postmedial line; subterminal line faint,

pale defined on each side by brown, sinuous; a small black spot on termen below apex with a white point on its inner side, followed by a series of brown striæ before termen and a brown terminal line; cilia with a greyish line at base; the underside paler, a discoidal lunule defined by brown, sinuous medial and postmedial lines, sinuous whitish subterminal line from costa to just below vein 2, and black spot on termen below apex with white point in centre.

Hab. Venezuela, 1 ♂ type. *Exp.* 42 millim.

8063. **Hypogrammodes subocellata.** (Plate CCXXXI. fig. 11.)

Cœnipeta subocellata, Schaus, Pr. U.S. Nat. Mus. xxx. p. 119 (1906).

Head and thorax chocolate-brown; palpi black with two fine white lines in front; sides of frons, upper part of frons, and vertex of head defined by white lines; tegulæ slightly edged with whitish; patagia with a patch of grey scales at middle; pectus and legs ochreous, the tibiæ and tarsi banded with red-brown; abdomen dark reddish brown, the ventral surface ochreous suffused with reddish brown. Fore wing chocolate-brown irrorated with greenish white; a slight sinuous whitish subbasal line from costa to median nervure; antemedial line whitish defined on each side by chocolate-brown, oblique, sinuous; two indistinct diffused sinuous chocolate-brown medial lines; reniform defined by greenish grey, figure-of-eight-shaped, its upper part indistinct; postmedial line chocolate-brown forming a spot at costa, then oblique to below vein 7, then waved, at vein 3 retracted to lower edge of reniform, and confluent in submedian interspace with the medial lines; subterminal line indistinct, greyish defined on inner side by chocolate-brown, incurved at discal and submedian folds and excurved at middle; some white points on apical part of costa; a subapical black spot on termen defined above and below by ochreous striæ and with white point on its inner edge, followed by a series of small lunulate chocolate-brown spots and a sinuous line just before termen; cilia dark brown. Hind wing deep red-brown; two indistinct sinuous medial lines and a postmedial line; a faint sinuous greyish subterminal line defined on inner side by darker brown; a series of white points before termen on veins 6 to 2, and a fine pale line at base of cilia; the underside greyish suffused with brown, the base of costal area and cell irrorated with grey; a discoidal lunule defined at sides by dark brown, the two medial and the postmedial lines distinct, a broad deep brown band before an ochreous whitish subterminal line diffused to termen above and below a black subapical spot with white point in centre.

Hab. Venezuela, 1 ♂, 1 ♀; Br. Guiana (*Roberts*), 1 ♂, 3 ♀. *Exp.* 42 millim.

8064. **Hypogrammodes glauca.** (Plate CCXXXI. fig. 12.)

Noctua glauca, Cram. Pap. Exot. iv. p. 45, pl. 311. f. G (1780).

Head and thorax bright chocolate-brown, the tegulæ and patagia edged with whitish, the latter with some whitish scales at middle;

palpi black with fine white streaks at sides; frons with white lines at sides and the upper part defined by white; pectus and legs ochreous tinged with red-brown, the tibiæ and tarsi banded with red-brown; abdomen red-brown, the ventral surface white tinged with rufous. Fore wing bright chocolate-brown irrorated with greenish white scales; a sinuous whitish subbasal line from costa to submedian fold; antemedial line greenish white defined on each side by chocolate-brown, sinuous; two indistinct sinuous chocolate-brown medial lines; reniform incompletely defined by white, narrow, constricted at middle; postmedial line greenish white defined on inner side by chocolate-brown, minutely waved, at vein 3 bent inwards to below end of cell, some white points beyond it on costa; subterminal line greenish white defined on inner side by chocolate-brown, excurved below vein 7 and at middle; a series of indistinct chocolate-brown spots before termen; a fine pale line at base of cilia. Hind wing chocolate-brown with a pale line at base of cilia; the underside greyish tinged with red-brown, the terminal area darker, a slight discoidal lunule defined by brown, and indistinct curved postmedial line.

Hab. Surinam; Brazil, Amazons, R. Jutahi, Boaventura (*Trail*), 1 ♂, 1 ♀. *Exp.* 36 millim.

*8065. **Hypogrammodes glaucoides.** (Plate CCXXXI. fig. 13.)

Cœnipeta glaucoides, Schaus, Pr. U.S. Nat. Mus. xxx. p. 116 (1906).

♂. Head, thorax, and abdomen bright red-brown; palpi streaked with yellow; sides of frons and head behind the eyes with yellow lines; basal joint of antennæ ringed with yellow; thorax with some silvery purple scales; tibiæ and tarsi ringed with yellow. Fore wing bright red-brown irrorated in parts with purplish white scales; subbasal line represented by double whitish striæ from costa; antemedial line double, waved, whitish towards costa, then purplish white; reniform incompletely defined by purplish white, narrow and constricted at middle; a sinuous purplish white medial line from cell to inner margin, and a whitish striga from costa; postmedial line yellowish towards costa, then purplish white, minutely waved, incurved below vein 4; subterminal line indistinct, pale, incurved and with some purplish white on it between veins 6 and 5 and 3, 2; a series of blackish spots before termen. Hind wing bright red-brown; a faint pale sinuous subterminal line except towards costa and tornus and a series of slight dark spots before termen with pale striæ before them between veins 7 and 2; the underside with oblique dark postmedial line and sinuous subterminal shade from costa to termen at submedian fold, with pale marks beyond it at apex, discal fold and vein 2.

Hab. Peru, Amazons, Cavallo Cocho, type † ♂ in U.S. Nat. Mus. *Exp.* 66 millim.

Genus **ANISONEURA.**

Type.

Anisoneura, Guen. Noct. iii. p. 160 (1852) ..... *salebrosa.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and broadly scaled, the 3rd long and thickly scaled; frons smooth; eyes large, round; antennæ of male with bristles and cilia; thorax clothed with scales and hair mixed and without crests; tibiæ slightly fringed with hair, the fore and hind tibiæ not spined; abdomen with dorsal ridges of hair on basal segments. Fore wing with the costa highly arched, the apex rounded, the termen evenly curved, crenulate; veins 3, 4 from angle of cell, 5 from above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about one-fourth length of wing; in female veins 3, 4 from angle of cell, 5 fully developed from above angle, 8 anastomosing with the cell near base only; in male vein 2 from close to base of cell, 3 from before middle and with thinly scaled brands in the interspaces on each side of veins 2 to 4.

Sect. I. Fore wing with the termen very oblique; hind wing of male with veins 6, 7 strongly stalked, in female slightly stalked.

A. Hind wing with the postmedial line slightly sinuous; the underside with the lines defined by whitish ..... *hypocyanea.*

B. Hind wing with the postmedial line slightly waved; the underside with the lines not defined by whitish.

a. Fore wing with greyish patch and oblique black mark on postmedial area ..... *papuana.*

b. Fore wing without greyish patch and oblique black mark on postmedial area ..... *zeuzeroides.*

8066. **Anisoneura hypocyanea.**

Anisoneura hypocyanea, Guen. Noct. iii. p. 162 (1852); Hmpsn. Moths Ind. ii. p. 456.

Head and thorax red-brown mixed with dark greyish brown, the tegulæ dark grey-brown with pale tips, the prothorax with slight red-brown line, the patagia with oblique black bars at middle; palpi, pectus, and legs dark greyish brown, the fore tibiæ with white point above at middle and white ring at extremity, the spurs and tarsi ringed with white; abdomen dark greyish brown, the ventral surface reddish brown. Fore wing red-brown with a diffused fuscous brown shade from costa towards apex to base of inner margin; a slight blackish subbasal line, excurved below costa, then oblique, sinuous and ending at submedian fold; antemedial line black, forming a small spot on costa, angled inwards below costa and outwards on median nervure and vein 2, then very oblique and slightly sinuous to inner margin near base; orbicular with faint dark annulus, small; reniform incompletely defined by black, constricted at middle, with white point before its lower extremity and patches of white or yellow and black scales below it and beyond its lower extremity; a diffused dark mark at middle of costa and traces of an oblique sinuous medial line; an elongate postmedial blackish spot defined by ochreous white on costa, the postmedial line arising well beyond it below the costa, very oblique and irregularly waved, black to vein 4, then brown to middle of inner margin;

some whitish points on postmedial part of costa; subterminal line very indistinct and strongly dentate with oblique teeth from costa to vein 4 and with an oblique black mark on it above vein 5, below vein 4 double, blackish, oblique, slightly sinuous at submedian fold; a black line before termen, slightly dentate at the veins and oblique in the interspaces. Hind wing red-brown suffused with grey-brown; an indistinct double waved antemedial line; an oblique waved medial blackish line slightly defined on outer side by grey; a double slightly sinuous oblique postmedial line, the inner line

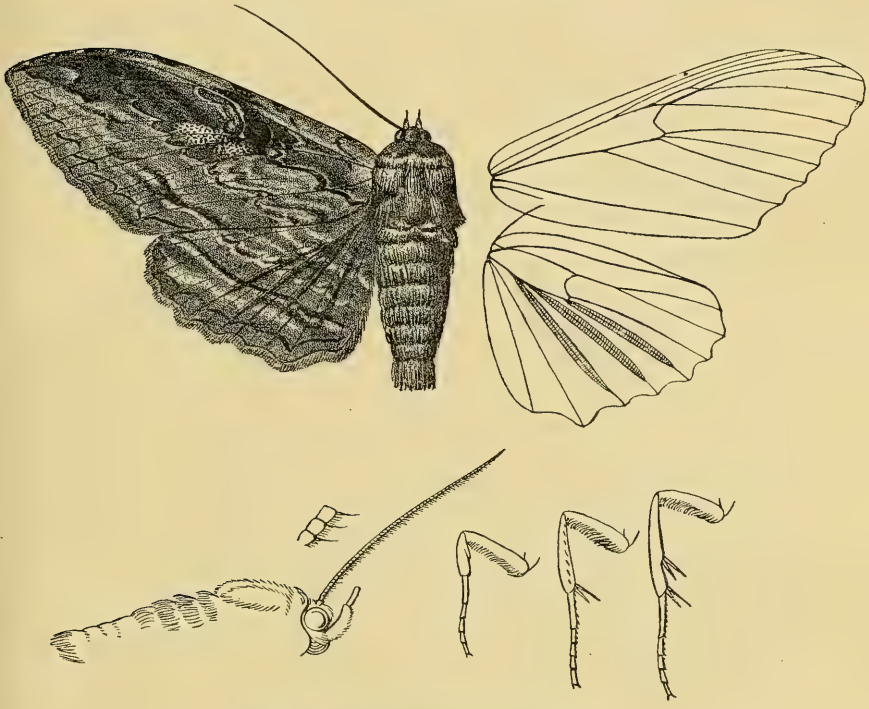


Fig. 62.—*Anisoneura hypocyanea*, ♂. ½.

black, the outer red-brown; an oblique slightly sinuous blackish subterminal line; traces of some dark striæ before termen; the underside brown tinged with purplish grey except on terminal area which is suffused with purple, a minute blackish discoidal spot, slightly waved blackish medial and postmedial lines excurved beyond the cell and defined on outer side by purplish grey interrupted in the interspaces; a diffused dark subterminal shade broad towards costa and defined on outer side by grey except towards apex.

Hab. W. China, Omei-shán, 1 ♀; Punjab (*Horne*), 1 ♂, Kulu, Sultanpur (*G. Young*), 1 ♂, Dharmsála (*Hocking*), 2 ♂, 2 ♀, Simla (*Harford*), 1 ♂, Kasauli, 1 ♂; Sikhim (*Boyle*), 1 ♀; Assam, Shillong (*Parish*), 2 ♂, Silhet, 2 ♂; Burma, Rangoon, 1 ♀; Singapore (*Ridley*), 1 ♂, 1 ♀; Borneo, Sarawak (*Bartlett*), 1 ♀. *Exp.* 94–128 millim.

8067. **Anisoneura papuana**, n. sp. (Plate CCXXVI. fig. 11.)

♀. Head and thorax brown mixed with grey; pectus brownish grey; tarsi with pale rings; abdomen grey-brown, the ventral surface paler. Fore wing brown mixed with grey; subbasal line blackish, excurved below costa, then irregularly waved and ending at vein 1; antemedial line blackish, strongly bent inwards below costa, then sinuous, angled outwards at vein 2, then very oblique to inner margin near base; reniform small, elliptical, with incomplete white annulus and its centre obscurely defined by blackish, some white and black scales below it and beyond its lower extremity; traces of a double sinuous medial line, very oblique below the cell; a small blackish postmedial spot on costa, the postmedial line arising well beyond it below the costa, oblique, waved, blackish to vein 3, then indistinct and faintly defined on each side by whitish; an oblique greyish shade from apical part of costa to beyond end of cell, with an oblique pale patch tinged with red-brown and irrorated with some black scales beyond it from apex to vein 3; subterminal line very indistinct, angled outwards at the veins and oblique in the interspaces from costa to vein 3 with an oblique dark mark on it above vein 5, then more distinct, double, oblique, and slightly excurved at submedian fold; a slight blackish line before termen, angled outwards at the veins and oblique in the interspaces. Hind wing brown tinged with grey; three indistinct slightly waved lines on medial area, followed by a diffused whitish-grey band between veins 6 and 1; postmedial line double, oblique, slightly waved, the inner line black, the outer red-brown; a fine waved black line before termen defined on outer side by slight grey-white marks in the interspaces; the underside pale grey-brown, rather diffused and slightly sinuous brown medial and postmedial lines, a diffused subterminal shade faintly defined on outer side by whitish.

Hab. Br. N. Guinea, Port Moresby, 1 ♀ type. *Exp.* 108 millim.

*8068. **Anisoneura zeuzeroides.**

Anisoneura zeuzeroides, Guen. Noct. iii. p. 162 (1852).
Anisoneura sphingoides, Feld. Reis. Nov. pl. 113. f. 1 (1874).

♂. Head, thorax, and abdomen dark red-brown; palpi with the 3rd joint greyish. Fore wing dark red-brown tinged with purple; antemedial line black slightly defined on inner side by ochreous, oblique and sinuous to median nervure, angled outwards at median nervure, vein 2, and submedian fold, then strongly angled inwards

above vein 1 and outwards on vein 1; a waved blackish medial line, oblique below submedian fold; reniform with its centre defined by blackish and with incomplete ochreous annulus; postmedial line black, defined on outer side by ochreous below vein 2, oblique, waved, angled inwards at vein 1; subterminal line ochreous defined on inner side by blackish, oblique, waved; a sinuous black line before termen. Hind wing dark red-brown faintly tinged with purple; oblique waved black medial, postmedial, and subterminal lines defined on outer side by ochreous, interrupted between veins 5 and 2 by the prominent depressed grooves in the interspaces; a sinuous black line before termen; the underside dark red-brown tinged with purple, indistinct rather diffused sinuous medial, postmedial, and subterminal blackish lines interrupted between veins 5 and 2 by the greyish depressed grooves.

Hab. Amboina, type † ♂ *sphingoides* in Coll. Rothschild; Hab. ign., type † ♂ in Mus. Paris. *Exp.* 120 millim.

Sect. II. Fore wing with the termen less oblique; hind wing of male with vein 6 from below angle of cell, of female with veins 6, 7 from angle.

8069. Anisoneura salebrosa.

Anisoneura salebrosa, Guen. Noct. iii. p. 161 (1852); Hmpsn. Moths Ind. ii. p. 457.

Anisoneura obscurata, Pag. J.B. Nass. Verh. xlix. p. 160, pl. 3. f. 4 (1896).

Head, thorax, and abdomen fuscous brown mixed with greyish, the last with the ventral surface paler; fore tibiæ with white point above at middle; tarsi dark brown ringed with white. Fore wing fuscous brown mixed with grey-brown, a deeper fuscous shade from apical part of costa to inner margin near base defined on outer side by a greyish shade with a slight reddish tinge; a curved subbasal black striga from costa with a white point on its outer edge at costa; antemedial line slight, blackish defined on inner side by grey and with white point at costa, minutely dentate to median nervure where it is bent outwards, then very oblique and slightly sinuous; reniform defined by a few pale scales and with white point at lower extremity; postmedial line slight, blackish defined on outer side by grey, indistinctly double at middle, strongly crenulate and dentate inwards at the veins, slightly bent outwards below costa and very oblique below vein 4; subterminal line very indistinct, dark, slightly defined by greyish below costa, sinuous, with an oblique blackish streak above vein 5 in which it is angled inwards to near the postmedial line, then very oblique; a slight blackish line before termen defined on outer side by greyish, angled outwards at the veins and oblique in the interspaces; a faint waved dark terminal line with slight greyish marks beyond it in the interspaces. Hind wing fuscous brown mixed with grey-brown, the medial area somewhat paler and faintly tinged with reddish; a minute whitish spot at lower angle of cell; two indistinct oblique dark medial lines defined

on outer side by greyish; postmedial line indistinct, dark defined on outer side by greyish, oblique, slightly waved; an oblique dark subterminal line defined on outer side by grey and with another faint line beyond it defined on outer side by grey below the discal fold; a black line before termen somewhat angled outwards at the veins and oblique in the interspaces; a faint waved dark terminal line with slight greyish marks beyond it in the interspaces. Underside whitish tinged with brown, the terminal areas grey-brown;

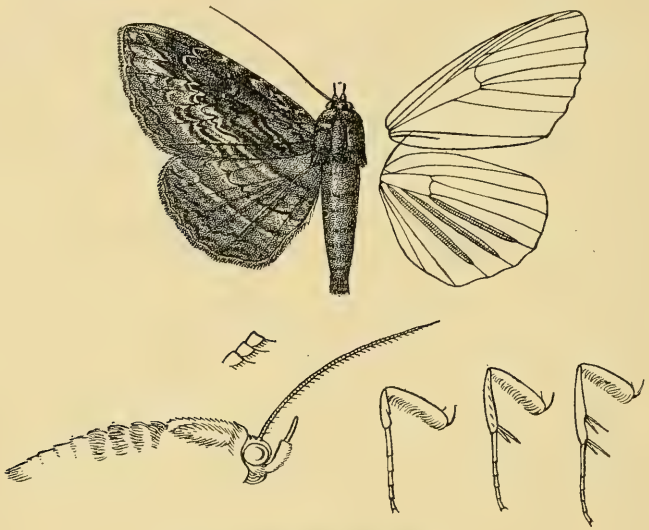


Fig. 63.—*Anisoneura salebrosa*, ♂. ½.

fore wing with faint dark bar from costa to lower angle of cell, sinuous dark postmedial line, and white subterminal line excurved below costa; hind wing with curved dark antemedial line, dark medial line excurved beyond the cell, and white subterminal line excurved at vein 6.

Hab. SIKHIM, 2 ♂, 1 ♀; ASSAM (*Badgley*), 1 ♂, 1 ♀, Silhet (*Stainsforth*), 1 ♂, 2 ♀; BORNEO, Kuching (*Shelford*), 1 ♂; SUMBA. *Exp.* 66–72 millim.

Genus **ANYDROPHILA.**

Type.

Anydrophila, John, Rev. Russ. Ent. ix. p. 123 (1909) ..... *mirifica.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and rather broadly scaled, the 3rd moderate, thickly scaled; frons smooth; eyes large, round; antennæ of male with long fasciculate cilia; thorax clothed with scales and hair mixed, the metathorax with spreading crest; fore tibiæ moderately fringed with hair, the mid and hind tibiæ with tufts of hair above at middle and extremity, the fore tibiæ not spined, the hind tibiæ spined between the mid and terminal spurs only; abdomen smoothly

scaled and without crests. Fore wing with the apex rounded, the termen evenly curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing on underside with elliptical black discoidal patch. *simiola.*
B. Fore wing on underside with oblique brown band beyond the cell.
a. Hind wing with apical black patch extending to vein 4 and spots on termen at middle and towards tornus.
a[1]. Fore wing with the postmedial line arising from apex, obliquely curved and slightly sinuous to near lower angle of cell ..... *mirifica.*
b[1]. Fore wing with the postmedial line bent outwards below costa and angled outwards at discal fold ..... *imitatrix.*
b. Hind wing with broad black terminal band interrupted at submedian fold ..... *sabouraudi.*

8070. Anydrophila simiola.

Palpangula simiola, Püng. Iris, xii. p. 295, pl. 9. f. 12 (1900); Staud. Cat. Lep. pal. p. 243.

Head and thorax white mixed with reddish brown; palpi white, tinged with brown towards tips; pectus and legs white, the latter

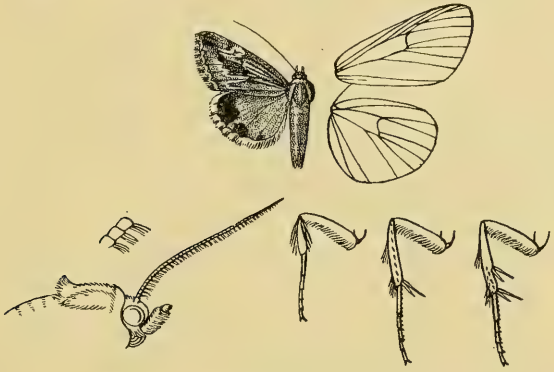


Fig. 64.—*Anydrophila simiola*, ♂. ½.

irrorated with brown, the tarsi banded black and white; abdomen yellow, the anal tuft and ventral surface white suffused in parts with red-brown and irrorated with blackish especially on the veins; a slight blackish subbasal mark on costa; traces of a sinuous brown antemedial line with small black spot at costa; postmedial line black defined on outer side by white, arising from a minute black spot at middle of costa, very oblique and slightly sinuous to vein 6 near termen, then obliquely curved and sinuous to below vein 3, then retracted to origin of vein 2 where there is a small black mark,

very strongly angled outwards in submedian fold to towards termen, then retracted to middle of vein 1 where it terminates; a waved blackish terminal line; cilia whitish with a diffused brown line at middle and chequered with brown at tips. Hind wing golden yellow, the costal area tinged with brown; a slight dark mark beyond lower angle of cell; a large blackish apical patch extending to below vein 5, a rounded spot at middle of termen and small brownish spot towards tornus; cilia white chequered with brown at middle and brownish at tornus. Underside of fore wing white, the costal and apical areas irrorated with brown, a large elliptical black discoidal patch extending to vein 2 with small spot above it on costa, and a subapical spot; hind wing yellow, the costal area white irrorated with brown, a large round subterminal spot below apex, a smaller spot at middle of termen, and small spot towards tornus.

Hab. W. Turkestan, Turcomania, Bokhara (*Hauser*), 1 ♂, 3 ♀, Imam-baba (*Koshantschikoff*), 2 ♂, Tekke, 1 ♂; E. Turkestan, Ili, Kungess. *Exp.* 30–34 millim.

8071. Anydrophila mirifica.

Euclidia mirifica, Ersch. Fedtsch. Reis. p. 54, pl. 4. f. 56 (1874); Staud. Cat. Lep. pal. p. 243.

♀. Head and thorax white mixed with reddish brown; palpi white slightly irrorated with brown towards tips; pectus and legs white, the fore and mid legs with the tibiæ irrorated with brown, the tarsi banded black and white; abdomen yellow, the extremity and ventral surface creamy white. Fore wing grey-white suffused in parts with red-brown and irrorated with black-brown especially on the veins; an indistinct diffused dentate red-brown medial line from cell to inner margin; a slight dark postmedial mark on costa; a diffused obliquely curved and slightly sinuous red-brown line from apex to just below vein 3 near lower angle of cell, with a faint shade from its lower extremity to inner margin; a slight waved blackish terminal line; cilia white with diffused brown line at middle and the tips chequered with brown. Hind wing golden yellow; minute black postmedial streaks on veins 4, 3, 2; a large black apical patch extending to vein 4, a large rounded spot at middle of termen and smaller spot towards tornus; cilia white faintly chequered with brown. Underside of fore wing white, the disk tinged with yellowish, the costa and termen irrorated with brown, a brownish spot at middle of costa and diffused band from beyond lower angle of cell to inner margin, an oblique black subapical spot from vein 7 to below 5 and black subterminal bar on inner area; hind wing with the costal area and terminal area to vein 3 white irrorated with brown, the rest of wing yellow, a large black subterminal spot below apex and smaller spots at middle of termen and towards tornus.

Hab. W. Turkestan (*Erschoff*), 1 ♀, Turcomania, Bokhara (*Hauser*), 1 ♀, Imam-baba (*Koshantschikoff*), 2 ♀; E. Turkestan, Ili. *Exp.* 38 millim.

8072. **Anydrophila imitatrix.**

Palpangula imitatrix, Christ. Stett. Ent. Zeit. 1887, p. 165; id. Rom. Mém. v. p. 42, pl. 3. f. 1; Staud. Cat. Lep. pal. p. 243.

Head and thorax red-brown mixed with whitish and some blackish; palpi blackish, the extremities of 2nd and 3rd joints white; pectus and legs white, the latter irrorated with brown, the fore and hind tarsi banded black and white; abdomen yellow faintly irrorated with brown, the anal tuft and ventral surface white irrorated with brown. Fore wing pale grey thickly irrorated and in parts suffused with red-brown; a black subbasal bar from costa; antemedial line black, arising from a small spot on costa, slightly bent outwards below costa, then somewhat oblique and waved; a dark mark at middle of costa and curved black discoidal striga; postmedial line blackish, bent outwards below costa, then obliquely downcurved and acutely angled outwards at discal fold, curved downwards and inwards from vein 5 to below end of cell, then strongly angled outwards in submedian fold and angled inwards at vein 1; a diffused pale shade on postmedial area; a slight waved dark terminal line with black points at the interspaces; cilia brownish at base, chequered brown and whitish at tips, Hind wing golden-yellow; a large apical black patch extending to vein 4, a rounded spot at middle of termen and small spot towards tornus; cilia white with a brownish line at middle except towards apex, the tips chequered with brown at middle. Underside of fore wing white, the disk tinged with yellowish, the costal and apical areas irrorated with brown, a diffused oblique brown band from beyond upper angle of cell to submedian fold, a black subapical patch from vein 7 to below 5 and some brown with slight black marks on it towards tornus. Hind wing yellow, the costal area white irrorated with brown, a large round black patch on termen below apex, a smaller spot at middle of termen, and small spot towards tornus.

Hab. W. Turkestan, Turcomania; Afghanistan, Kuschk, 1 ♂, 1 ♀. *Exp.* 32 millim.

*8073. **Anydrophila sabouraudi.** (Plate CCXXVI. fig. 9.)

Palpangula sabouraudi, D. Lucas, Bull. Soc. Ent. Fr. 1907, p. 180; id. Ann. Soc. Ent. Fr. lxxix. p. 484, pl. xviii. f. 6 (1911).

♂. Head and thorax grey mixed with fuscous; palpi white in front; tarsi banded with black; abdomen grey-white tinged with brown. Fore wing grey suffused with brown and irrorated with black; subbasal line represented by a slight oblique black striga from costa; a rather diffused black streak below base of cell; antemedial line, orbicular, and reniform absent; a diffused black streak in discal fold in terminal half of cell and slight streaks on the bases of veins arising from cell; postmedial line hardly traceable, bent outwards below costa and incurved below vein 5,

met at vein 5 by a slight dark shade from termen below apex; the veins and interspaces of terminal area with slight dark streaks, a stronger streak above middle of vein 5, not reaching termen; cilia intersected by dark streaks. Hind wing orange-yellow with broad black terminal band slightly interrupted at submedian fold; cilia white intersected with black from below apex to vein 2. Underside white; fore wing with oblique fuscous band from upper angle of cell to above inner margin and fuscous terminal band narrowing to tornus and suffused with grey at costa and termen; hind wing with the inner area tinged with yellow, the terminal band partially interrupted at submedian fold and with some white on it at apex.

Hab. Tunis, Zarcine, type † in Coll. D. Lucas. *Exp.* 35 millim.

Genus **CEROCALA.**

	Type.
Cerocala, Boisd. Ind. Meth. p. 171 (1840)	*scapulosa.*

Proboscis fully developed; palpi upturned, the 2nd joint oblique, reaching to well above vertex of head and moderately scaled, the 3rd very long and somewhat dilated at extremity; frons smooth, with tuft of hair above; eyes large, round; antennæ of male bipectinate with moderate branches to apex; thorax clothed with hair and hair-like scales and without crests; tibiæ smoothly scaled, all the tibiæ strongly spined, the fore tibiæ short and with claw-like spines at extremity; abdomen smoothly scaled and without crests. Fore wing with the apex rounded, the termen evenly curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about one-third length of wing; veins 3 and 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ bipectinate in both sexes.

8074. **Cerocala cælata.**

Cerocala cælata, Karsch, Ent. Nachr. xxii. p. 235 (1896).

Head whitish, the palpi, frons, and branches of antennæ brown; thorax dark brown, the tegulæ whitish except at sides; pectus and

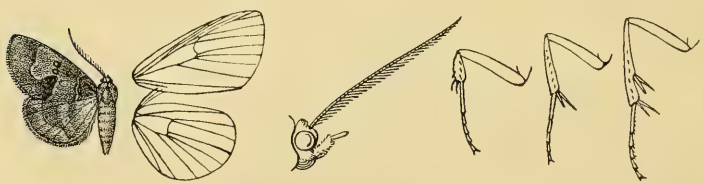


Fig. 65.—*Cerocala cælata*, ♀. ½.

legs white and fuscous, the tarsi black ringed with white; abdomen grey-brown with segmental white lines. Fore wing purplish grey

irrorated with blackish; the costal half of basal area fuscous with some silvery scales on it; a faint pale sinuous antemedial line; orbicular a round black spot with tuft of raised silver scales on it, the reniform represented by two similar spots; postmedial line whitish, excurved from discal fold to below vein 3, then retracted to lower angle of cell and sinuous to inner margin, some purplish red defined by some silvery scales on its outer side, its sinus and the whole of the area beyond it fuscous; subterminal line represented by whitish marks towards costa. Hind wing grey-white suffused with fuscous brown; a diffused fuscous postmedial band broad towards costa, narrowing to inner margin; indistinct diffused subterminal and terminal lines. Underside whitish; both wings with the basal half and termen suffused with brown; fore wing with blackish spot in middle of cell, broad discoidal bar and postmedial band narrowing to inner margin; hind wing with broad black discoidal bar with diffused curved band from it to above inner margin, and postmedial band broad towards costa, narrowing to inner margin.

Hab. Togoland, Misahöhe; N. Nigeria, Bauchi Prov., Kabwir (*Fox*), 1 ♀, Ilorin (*Macfie*), 2 ♀, Zungeru (*Macfie*), 1 ♂, 1 ♀, Minna (*Macfie*), 1 ♀, Bida (*Macfie*), 1 ♀, Baro (*Macfie*), 1 ♀, Badeggi (*Macfie*), 1 ♀. *Exp.* 28 millim.

Sect. II. Antennæ of female ciliated.

A. Fore wing with the postmedial line retracted to base in submedian interspace ..... *illustrata.*
B. Fore wing with the postmedial line running to inner margin and not retracted to base.
  a. Hind wing with the ground-colour white or ochreous white.
    a^1. Hind wing without oblique diffused antemedial dark band.
      a^2. Hind wing not tinged with rufous.
        a^3. Hind wing with a bifid black spot below apex and black patch at middle of termen.
          a^4. Fore wing with the postmedial line not curved inwards below costa ..... *insana.*
          b^4. Fore wing with the postmedial line slightly curved inwards below costa ..... *sana.*
        b^3. Hind wing with the whole terminal area blackish ..... *oppia.*
      b^2. Hind wing tinged with rufous, a conjoined terminal series of fuscous brown spots from apex to vein 2.
        a^3. Hind wing without blackish subterminal band. *munda.*
        b^3. Hind wing with broad blackish subterminal band ..... *scapulosa.*
    b^1. Hind wing with an oblique diffused antemedial dark band.
      a^2. Fore wing with the antemedial line bent inwards to inner margin ..... *vermiculosa.*
      b^2. Fore wing with the antemedial line bent outwards to inner margin ..... *socotrensis.*
      c^2. Fore wing with the antemedial line oblique, straight ..... *orientalis.*

b. Hind wing with the ground-colour grey-brown.
*a*¹. Fore wing with white before the costal half of the postmedial line, the ante- and postmedial lines more or less closely approximated below the cell ..... *masaica*.
*b*¹. Fore wing without white before the costal half of the postmedial line, the ante- and postmedial lines well separated below the cell ..... *contraria*.

8075. **Cerocala illustrata.** (Plate CCXXVI. fig. 10.)

Cerocala illustrata, Holl. Don.-Smith's 'Through Unknown African Countries,' p. 417, pl. f. 1 (1897).
Pseudophia lineata, Druce, P. Z. S. 1900, p. 19, pl. i. f. 7.

Head and thorax reddish brown mixed with whitish; palpi white; pectus, legs, and abdomen white faintly tinged with rufous. Fore wing grey-brown; a rather diffused wedge-shaped whitish patch in and below the cell, defined below by a black streak in submedian fold bent upwards to lower angle of cell; a diffused blackish discoidal bar; postmedial line blackish defined on inner side by an oblique whitish band, oblique from just beyond upper angle of cell to vein 3 below which it is retracted to join the black streak at lower angle of cell; subterminal line white defined on inner side by dark brown suffusion, strongly angled inwards at discal fold, excurved at middle, then acutely angled inwards just above vein 1, and with slight blackish streaks before and beyond it in the interspaces; some dark points on termen. Hind wing white tinged with brown, the terminal area broadly fuscous brown except at tornus; cilia white except at middle and tornus. Underside of fore wing white with dark discoidal bar, the terminal area brown expanding on inner area and emitting a tooth to the discoidal bar, the cilia white at apex; hind wing white, the terminal area brown narrowing to a point at tornus and leaving a diffused whitish patch at middle of termen.

Ab. 1. Fore wing darker with the white markings narrow.

Ab. 2. ♂. Hind wing with the basal area pure white.

Hab. Abyssinia, Argeesa (*Donaldson-Smith*), type † ♀ in Coll. Holland; Somaliland, Bulhar (*Drake-Brockman*), 3 ♂, 4 ♀. *Exp.* 30–40 millim.

8076. **Cerocala insana.**

Grammodes insana. Herr.-Schäff. Aussereur. Schmett. f. 395 (1850).
Cerocala scapulosa, Lucas, Ann. Soc. Ent. Fr. 1850, p. 103, pl. 2. f. 3 (nec Hübn.).
Cerocala algiriæ, Oberth. Ét. Ent. i. p. 55, pl. iv. f. 7 (1876); Staud. Cat. Lep. pal. p. 241.

Head and thorax grey mixed with red-brown and some black scales; vertex of head and base of tegulæ white, the latter with black medial line; antennæ black, the shaft white above; palpi white, the 2nd joint brown at extremity, the 3rd blackish mixed with white; pectus and legs white irrorated with black, the tarsi black ringed with white; abdomen white dorsally tinged with

rufous and slightly irrorated with black. Fore wing rufous with a silvery gloss, the costal area, the inner margin except towards base and the terminal area grey-white irrorated with black; a white streak on base of subcostal nervure, a black point in base of cell and slight streak in base of submedian fold; antemedial line black defined on outer side by white, from subcostal nervure to inner margin, strongly excurved; an oblique reddish white discoidal bar defined at sides by black scales, its inner side sinuous; an oblique reddish white postmedial band from subcostal nervure to vein 2, defined on outer side by the black postmedial line, which at vein 2 is retracted to lower angle of cell, then obliquely incurved to inner margin, defined on inner side by white and with some reddish white between it and the antemedial line in submedian interspace; subterminal line white, oblique, angled inwards at discal and submedian folds, narrowly defined on outer side by the rufous ground-colour which runs obliquely to apex; a slight waved black terminal line; cilia rufous at base with brown line at middle and whitish tips. Hind wing white, the basal and inner areas suffused with rufous to the rufous postmedial band with sinuous outer edge; a somewhat bidentate black spot at apex and a terminal patch between veins 4 and 2 with the cilia beyond it brown at base; the underside white, a small black discoidal spot, indistinct obliquely curved rufous band from costa beyond middle to tornus, and the black spots on termen as above.

Ab. 1. Fore wing more uniformly suffused with rufous, the markings obscured; hind wing with the postmedial band and terminal black patches obsolescent.

Hab. Algeria, Biskra (*Walsingham*, *Eaton*), 2 ♂, Hammam-el-Salahin (*Walsingham*), 2 ♂, 2 ♀. *Exp.* 34–38 millim. The locality "Cape" is an error.

8077. **Cerocala sana.** (Plate CCXXVI. fig. 12.)

Cerocala insana, Staud. Cat. Lep. Eur. ed. ii. p. 135 (nec Herr.-Schäff.).
Cerocala sana, Staud. Cat. Lep. pal. p. 241 (1901).

Head and thorax creamy white mixed with brown, the vertex of head and base of tegulæ creamy white; antennæ white, the branches blackish; palpi white, the extremity of 2nd joint red-brown, the 3rd joint irrorated with brown; tarsi brown ringed with white; abdomen creamy white dorsally irrorated with brown and with some blackish scales at sides. Fore wing creamy white suffused with dark red-brown and rufous, a white streak on subcostal nervure; antemedial line arising at subcostal nervure, blackish with a broad dark red-brown band on its inner side and defined on outer side by creamy white, strongly excurved; medial area rufous except towards costa; orbicular reddish brown defined by blackish, round; reniform reddish brown defined by blackish except below, an oblique whitish band from below costa at end of cell to the subterminal line above vein 2, with slightly sinuous edges, defined on outer side by the

slight blackish postmedial line, which at vein 2 is retracted to lower end of cell, then sinuous and bent outwards to inner margin; postmedial area deep red-brown with blackish streaks in the interspaces before the white subterminal line, which is waved towards costa and strongly angled inwards at discal and submedian folds; terminal area suffused with rufous with an oblique whitish line beyond the subterminal line arising from apex; a terminal series of slight blackish lunules. Hind wing creamy white, the inner area tinged with rufous; a rather diffused rufous postmedial band ending at tornus, excurved at middle and incurved above vein 2; a rather trifid dark red-brown apical patch and a terminal patch between veins 4 and 2 with the cilia beyond it brown. Underside white; fore wing with black discoidal spot with oblique brown band from it to inner margin, two blackish spots on apical part of termen and a patch at middle of termen; hind wing with minute discoidal spot, the postmedial band obsolescent, the terminal patches as above.

Ab. 1. Fore wing with the postmedial white band narrower and not extending to the subterminal line.

Ab. 2. Hind wing with the postmedial band more diffused on terminal area.

Hab. Asia Minor, Mersina (*Lederer*), 1 ♂, Taurus (*Lederer*), 5 ♂, 1 ♀; Syria, 2 ♂, Leech Coll., Antioch; Persian Gulf, Bander Abbas (*James*), 1 ♀. *Exp.* 32–38 millim.

8078. **Cerocala oppia.** (Plate CCXXVI. fig. 13.)

Pseudophia oppia, Druce, P. Z. S. 1900, p. 18, pl. i. f. 1.

♀. Head and thorax bright rufous, the back of head and base of tegulæ whitish; palpi except at tips, pectus, and legs white, the fore tibiæ and tarsi tinged with brown in front; abdomen white dorsally banded with glossy grey-brown. Fore wing deep rufous, the costal area brown irrorated with grey and silvery scales, the base of inner margin whitish, the terminal area grey-white irrorated with brown; an interrupted sinuous silver subbasal line, incurved in submedian interspace; antemedial line black, defined on outer side by white, arising at subcostal nervure and almost erect; medial area paler rufous; orbicular a small round silver spot incompletely defined by black; reniform with silver and rufous centre incompletely defined by black; an obliquely curved whitish band beyond the cell from just below costa to vein 2 at the subterminal line, its lower part tinged with rufous, defined on outer side by the slight black postmedial line, which at vein 2 is retracted to lower edge of reniform, then oblique to inner margin and defined on inner side by white, an oblique silver band beyond it from below costa to vein 3 and an incurved band from vein 2 to inner margin; subterminal line yellowish white defined on outer side by rufous, angled inwards at discal fold and oblique below vein 3; a slight waved dark terminal line; cilia whitish tinged with rufous. Hind wing white, the terminal area black-brown, broadly at costa and narrowing

to tornus; cilia white with black-brown patches at middle and tornus. Underside white with the terminal areas black; fore wing with oblique black band from discocellulars to the terminal black area at inner margin, a white patch before middle of termen; hind wing with some white on apical part of termen and an oblique bar at vein 2.

Hab. Somaliland, Hawcea (*Peel*), 1 ♀. *Exp.* 28 millim. Type † in Mus. Oxon.

*8079. **Cerocala munda.** (Plate CCXXVI. fig. 14.)

Cerocala munda, Druce, P. Z. S. 1900, p. 19, pl. i. f. 3.

♀. Head and thorax ochreous white mixed with some rufous; tegulæ with some brown scales; tibiæ and tarsi brownish, the latter ringed with white; abdomen ochreous, the ventral surface whitish. Fore wing ochreous suffused with rufous, the costal area, inner medial area, and the terminal area white irrorated with brown; antemedial line blackish defined on outer side by white, strongly excurved from subcostal nervure to inner margin, some black suffusion before it with silvery striæ in and below the cell; a small blackish and silvery spot in upper part of middle of cell; reniform defined by blackish, with some silvery scales on upper and lower part and terminal part of median nervure; an obliquely incurved white band beyond the cell from below the costa to vein 3, defined on outer side by the black postmedial line, which at vein 3 is retracted to lower angle of cell, then inwardly oblique to above vein 1, bent outwards to inner margin and slightly defined on inner side by white, a silvery line beyond it from below costa to vein 3, and a blackish and silvery patch in submedian interspace; subterminal line slight, pale, defined on inner side by brown suffusion and on outer side by rufous, angled inwards at discal fold to the silvery line and oblique below vein 4; a terminal series of blackish points; cilia brown with a white patch at apex. Hind wing whitish suffused with rufous; a brown discoidal spot, faint subterminal shade, and terminal series of conjoined blackish spots from apex to vein 2, underside white mostly suffused with rufous; both wings with large black discoidal spot; fore wing with quadrate black patch at apex.

Hab. Somaliland, Haud, Odeweni (*Peel*), type † ♀ in Mus. Oxon. *Exp.* 32 millim.

8080. **Cerocala scapulosa.**

Noctua scapulosa, Hübn. Eur. Schmett., Noct. ff. 360–561 (1808); Dup. Lép. Fr. vii. p. 353, pl. 121. ff. 5-6; Mill. Icones, ii. pl. 89. ff. 3, 4; Staud. Cat. Lep. pal. p. 241.

Head and thorax dark brown mixed with greyish, the vertex of head and base of tegulæ creamy white; antennæ with the shaft whitish above; palpi white, the 2nd joint dark brown above, the 3rd joint blackish irrorated with white; pectus white mixed with

brown; legs grey irrorated with brown; abdomen creamy white suffused with brown, the ventral surface white. Fore wing grey tinged with brown, the costal area irrorated with dark brown; subbasal black striæ from costa and cell and a black streak in base of submedian fold; antemedial line black faintly defined on outer side by whitish, arising at subcostal nervure and bent inwards to inner margin, a grey-brown band suffused with silvery scales before it, on inner area extending to base; orbicular grey-brown with a silvery gloss, defined by black, small, round; reniform grey-brown with a silvery gloss, defined at sides by black, somewhat produced at upper extremity; postmedial line black, arising below costa, oblique to vein 4, then excurved to the subterminal line, at vein 2 retracted to lower edge of reniform, then obliquely incurved to inner margin, the area between it and the subterminal line grey-brown with a silvery gloss and slight blackish marks before the

Fig. 66.—*Cerocala scapulosa*, ♂. $\frac{1}{1}$.

creamy white subterminal line, which is oblique and slightly sinuous, angled inwards at discal and submedian folds and excurved at middle, defined on outer side by a red-brown line bent outwards to apex; a crenulate black line just before termen except towards apex and tornus; cilia reddish brown, white at tips towards apex. Hind wing creamy white tinged with rufous especially on inner area; a red-brown band from costa beyond middle to tornus, slightly angled inwards above vein 2; a series of dentate black-brown spots on the extremities of the veins from apex to vein 2; cilia chequered with reddish brown from apex to vein 2. Underside creamy white; fore wing with oblique irregular reddish brown band from the discocellulars to above inner margin, diffused below the cell, a conical subterminal black-brown patch from costa to vein 6, a terminal series of black-brown spots except towards

tornus; hind wing with oblique brown bar from vein 2 to termen above tornus and terminal series of black-brown spots from apex to vein 2, confluent towards apex and at middle.

Hab. Spain, Andalusia, Zeller, Frey, and Leech Colls., Gibraltar (*Meade-Waldo*). *Exp.* 40–42 millim.

Larva. Kirby, Butt. & Moths Eur. p. 278, pl. 53. ff. 3 *a–b*; Hoffm. Raup. p. 145.

Long, slender, cylindrical, livid grey; head yellow, the two anterior pairs of prolegs absent. Food-plant, *Helianthemum halimifolium*. 4–6 and 9–10.

8081. **Cerocala vermiculosa.** (Plate CCXXVI. fig. 15.)

Cerocala vermiculosa, Herr.-Schäff. Aussereur. Schmett. ff. 134–135 (1850).

Head and thorax grey-brown, the vertex of head and base of tegulæ creamy white with some rufous hair above; patagia with black streaks above; antennæ with the shaft whitish above; palpi, pectus, and legs creamy white, the fore and mid tibiæ black-brown above; abdomen creamy white, dorsally tinged with rufous. Fore wing creamy white suffused with rufous, the costal area white irrorated with brown to the postmedial line, the terminal area white irrorated with brown, the termen brown except towards apex; subbasal black striæ from costa and cell with a slight black streak beyond them in submedian fold; an antemedial black point on costa; the antemedial line black defined on outer side by white, strongly excurved, a broad grey-brown band before it with black and silvery markings on its inner edge; medial area strongly suffused with rufous except towards costa; orbicular grey-brown suffused with silvery scales and defined by black, round; reniform grey-brown suffused with silvery scales, defined by black except below, a red-brown patch beyond it with a black line on its outer edge; an oblique creamy white band tinged with rufous below from costa beyond the cell to the subterminal line at vein 2, defined on outer side by the black postmedial line, which at vein 2 is retracted to lower edge of reniform, then obliquely incurved to inner margin and slightly defined on inner side by white, the area between it and the subterminal line grey-brown with a silvery gloss and some black streaks and marks before the subterminal line and below end of cell; subterminal line whitish, oblique, strongly angled inwards at discal fold and very acutely angled inwards in submedian fold to below end of cell, defined on outer side by a brown line arising from apex; a crenulate black terminal line; cilia reddish brown, whitish towards apex. Hind wing creamy white, the basal and inner areas suffused with rufous; a curved black-brown postmedial band from costa to vein 2 where it is conjoined to an oblique patch from tornus, extending to termen from below apex to vein 5, the black-brown extending on termen to vein 2; cilia white, black-brown at middle and tornus. Underside creamy white; fore wing with black-brown discoidal patch with oblique brown band from it to above inner

margin, where it is conjoined to a curved black-brown postmedial band expanding into a large patch on costal area and diffused to termen from below apex to vein 3; hind wing with black discoidal spot, broad oblique sinuous band from costa to beyond middle to tornus, and diffused maculate terminal band from below apex to vein 2.

Hab. Lourenço Marques, Delagoa Bay (*Distant*), 1 ♀; Bechuanaland, Lake N'Gami (*Lugard*), 2 ♀; Transvaal, Pretoria (*Distant*), 1 ♂; Orange R. Colony, Bloemfontein (*Eckersley*), 1 ♀, Leewspruit (*Hamilton*), 1 ♂; Cape Colony (*Sir A. Smith*), 1 ♂, Grahamstown, 1 ♂, Knysna (*Trimen*), 1 ♂, 1 ♀, Eerste R. (*Trimen*), 1 ♂, 1 ♀, Simons Town (*de la Garde*), 1 ♀. *Exp.* 42–50 millim.

8082. **Cerocala socotrensis.** (Plate CCXXVI. fig. 16.)

Cerocala sokotrensis, Hmpsn. Bull. Liverp. Mus. ii. p. 36 (1899); id. Nat. Hist. Sokotra, p. 326, pl. xx. f. 27.

Head and thorax reddish brown mixed with grey, the vertex of head and base of tegulæ creamy white, the latter with black medial line; antennæ with the shaft white above; palpi white, the extremity of 2nd joint and the 3rd joint irrorated with brown; pectus and legs white; abdomen white dorsally tinged with rufous. Fore wing whitish suffused with rufous, the costal area grey-white thickly irrorated with dark brown, the terminal area grey irrorated with blackish, the termen suffused with reddish brown except at apex; antemedial line black defined on outer side by creamy white, oblique, slightly sinuous, a broad grey-brown band before it from below costa to above inner margin, its inner edge angled inwards at submedian fold and vein 1; medial area rufous except towards costa; orbicular and reniform grey-brown with a silvery gloss defined by black, the former round, the latter slightly produced at upper extremity; an oblique creamy white band beyond the cell from below costa to vein 2, defined on outer side by the black postmedial line, which at vein 2 is retracted to lower angle of cell, then obliquely incurved to inner margin and defined on inner side by white; postmedial area grey-brown with a silvery gloss and some blackish before the subterminal line, which is whitish, angled inwards at discal fold, excurved at middle and angled inwards at submedian fold, defined on outer side by a brown line bent outwards to apex; a terminal series of black lunules; cilia fuscous brown, white at apex. Hind wing creamy white suffused with rufous to the postmedial band except a patch beyond the cell; a blackish streak near base of inner area; a blackish streak on extremity of median nervure and a diffused oblique fascia on discocellulars and thence to the postmedial band at submedian fold; postmedial band dark red-brown, its inner edge oblique to tornus, its outer edge extending almost to termen but leaving some white on termen above and below two black spots on apical part of termen and a large spot at middle of termen with small

spot below it; cilia with some black-brown beyond the two spots at middle of termen and at tornus. Underside white; fore wing with oblique black fascia from discocellulars to submedian fold, large black apical patch with oblique band from it to inner margin, the terminal area grey-brown; hind wing with small black spots on discocellulars and beyond lower angle of cell, a reddish brown postmedial band from costa to termen at vein 1 where it becomes a blackish patch, its outer edge excurved on costal half, black patches on termen below apex and at middle.

Hab. Sokotra, Jena-agahan (*O.-Grant*), 1 ♀, Hadibu Plains (*O.-Grant*), 5 ♂, 5 ♀ type. *Exp.* 38–46 millim.

*8083. **Cerocala orientalis.** (Plate CCXXVI. fig. 17.)

Cerocala orientalis, de Joan. Bull. Soc. Ent. Fr. 1912, p. 287.

♀. Head and thorax brown mixed with some greyish; palpi white with a slight brown streak on 2nd joint and the 3rd joint brown; antennæ whitish; pectus white with black spots below the eyes; legs white, the tibiæ and tarsi tinged with brown; abdomen white dorsally irrorated with brown. Fore wing whitish thickly irrorated and in parts suffused with brown; some bluish white on costal area to beyond middle and on terminal area below apex; a rather oblique black antemedial line with brown suffusion before it with a sinuous series of silvery points on it except towards costa, some whitish beyond it except towards costa; orbicular a small black spot with some silvery scales on it; reniform brown defined by blackish, a silvery point at its upper extremity and some silver near its inner and lower edges, a whiter patch beyond it; postmedial line black, oblique to vein 2, then retracted to below angle of cell and obliquely incurved to inner margin, some brown suffusion beyond it with an oblique silver line on it from below costa to vein 3 and some silver in submedian interspace; a whitish subterminal line angled inwards below costa and at discal fold and oblique below vein 4, the area before it dark brown to vein 3 and beyond it obliquely to apex; a waved black terminal line; cilia brownish. Hind wing fuscous brown; an oblique white medial band from costa to vein 2 where it ends in a point; an oblique white bar from vein 2 to termen at submedian fold; cilia white, black-brown between vein 4 and submedian fold. Underside of fore wing white tinged with rufous towards base, an oblique blackish discal band from below costa to submedian fold where it joins the blackish terminal area with curved inner edge and some whitish on it between vein 4 and submedian fold; hind wing white with black discoidal lunule and spot above it on costa, the terminal area black with wedge-shaped white marks from apex and towards tornus.

Hab. Cochin-China, Cap. St. Jacques (*Fouquet*), type † ♀ in Coll. de Joannis. *Exp.* 44 millim.

8084. **Cerocala masaica**, n. sp. (Plate CCXXVI. fig. 18.)

Head and base of tegulæ creamy white tinged with rufous; palpi slightly irrorated with brown above; frons rufous above; antennæ with the shaft white ringed with brown, the branches blackish; thorax grey-brown with a silvery gloss; pectus and legs white tinged with rufous, the fore tibiæ in front and the tarsi dark brown, the latter ringed with white; abdomen whitish suffused with rufous. Fore wing red-brown, the area below the costa white irrorated with red-brown, the medial area and band beyond the cell whitish suffused with rufous, the terminal area pale grey irrorated with brown; a V-shaped silver mark from middle of cell to above inner margin before the antemedial line, angled inwards in submedian fold where there is some black before and beyond it; antemedial line black, oblique, obsolescent on costal area and slightly defined on outer side by white; orbicular and reniform silvery defined by black, the former small, round, the latter narrow and open above and below; the band beyond the cell oblique from costa to the subterminal line at vein 2, defined on outer side by the black postmedial line, which is slightly incurved to vein 2, then retracted to lower edge of reniform, obliquely incurved to inner margin, more or less approximated to the antemedial line and slightly defined on inner side by white; a slightly incurved silver line on the red-brown postmedial area from below costa to vein 3, then interrupted and obliquely curved from below the sinus of the postmedial line to inner margin, some short black streaks beyond it before the subterminal line, which is slight and whitish, incurved at discal fold and almost obsolete below vein 3; a brown terminal line; cilia pale red-brown at base, whitish at tips. Hind wing whitish, the basal and inner areas suffused with reddish brown; a diffused dark discoidal bar with whitish patch beyond it; a broad diffused fuscous shade from costa to vein 2, defined on outer side by whitish; the terminal area fuscous; cilia white tinged with red-brown. Underside white; fore wing with the discal area tinged with brown, the orbicular and reniform fuscous, an oblique fuscous postmedial band expanding towards costa, the termen suffused with fuscous; hind wing with some dark brown on costa near base, a streak in middle of cell and large discoidal patch, a sinuous band from costa beyond middle to tornus, broad at costa and narrowing to tornus, the termen dark from apex to vein 2.

Hab. Br. E. Africa, Kilimakiu (*Crawshay*), 1 ♂ type, Machakos (*Crawshay*), 1 ♀, Kiu (*Crawshay*), 1 ♀, Nairobi (*Betton*, *Anderson*), 3 ♂, Muani (*Betton*), 1 ♀. *Exp.* 30–34 millim.

8085. **Cerocala contraria.** (Plate CCXXVI. fig. 19.)

Poaphila contraria, Wlk. xxxiv. 990 (1865).
Bolina revulsa, Wllgrn. Öfv. Vet.-Akad. Förh. 1875, p. 116.

Head creamy white with a brown band above frons; antennæ

with the branches blackish; thorax grey-brown with a silvery gloss, the base of tegulæ creamy white; pectus and legs pale brown, the mid tibiæ with fine brown streaks; abdomen grey-brown. Fore wing grey-brown; some silvery scales at base; minute subbasal black striæ from costa and cell; antemedial line black, oblique, strong except at costa, slightly angled outwards below costa, defined on inner side by silvery scales; orbicular and reniform with silvery centres strongly defined by black, the former small, round; postmedial line black, oblique to below vein 3, then retracted to lower edge of reniform and oblique to inner margin, the area beyond it suffused with black to the subterminal line, with an oblique silvery line beyond the postmedial line from costa to vein 3, then interrupted and incurved from the sinus of the postmedial line to inner margin; subterminal line only defined by the contrast between the postmedial and terminal areas, angled inwards at discal fold, excurved at middle, and incurved below vein 3; a slight waved dark terminal line. Hind wing whitish strongly suffused with grey-brown; a fuscous brown sinuous band from costa beyond middle to tornus, diffused on inner side and defined on outer side by whitish; a slight dark terminal line. Underside of fore wing brownish grey, a dark discoidal patch with whitish patches before and beyond it, an oblique dark postmedial band expanding at costa; hind wing whitish tinged with brown, the costa brown, a blackish discoidal lunule, sinuous postmedial brown band, and terminal band from apex to vein 2.

Hab. Mashonaland, Umtali (*Marshall*), 1 ♀; Rhodesia, Bulawayo (*Eyles*), 1 ♀; Transvaal, Piet Retief (*Crawshay*), 4 ♂, 2 ♀, White R. (*Cooke*), 1 ♂, Rietfontein (*Janse*), 1 ♂, Eerstel (*Janse*), 1 ♀, Johannesburg, (*Cregoe*), 1 ♂, Pretoria (*Distant*), 1 ♂, 1 ♀; Natal, Malvern (*Marshall*), 1 ♀, Durban (*Bowker*), 1 ♀; Cape Colony, Annshaw (*Miss F. Barrett*), 1 ♂, 2 ♀. *Exp.* 32–40 millim.

Genus **LEUCANITIS.**

	Type.
Leucanitis, Guen. Noct. iii. p. 58 (1852)	*roda.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching about to vertex of head and moderately scaled, the 3rd moderate; frons smooth; eyes large, round; antennæ of male ciliated; thorax clothed with hair and scales mixed, the metathorax with spreading crest; tibiæ smoothly scaled, the fore tibiæ with more or less developed claws on inner and outer sides at extremity, the hind tibiæ not spined; abdomen smoothly scaled and without crests. Fore wing with the apex rounded, the termen evenly curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Fore tibiæ with the claws well developed.

A. Fore wing with the ante- and postmedial lines conjoined at submedian fold and not extending to inner margin ... *cabylaria.*

B. Fore wing with the ante- and postmedial lines not conjoined at submedian fold and extending to inner margin.
  a. Hind wing without oblique dark discoidal band ..... *sesquistria*.
  b. Hind wing with oblique dark discoidal band ..... *picta*.

8086. **Leucanitis cabylaria.** (Plate CCXXVI. fig. 20.)

Leucanitis kabylaria, Bang-Haas, Iris, xix. p. 136, pl. v. f. 7 (1906); John, Hor. Soc. Ent. Ross. xxxix. p. 613, pl. xvi. f. 7 *c* & pl. xix. f. 7.

Head white irrorated with brown, the antennæ fuscous; thorax red-brown mixed with some ochreous white and dark brown; pectus and legs white irrorated with brown; abdomen ochreous white irrorated with brown, the ventral surface whiter. Fore wing red-brown, the costal and inner areas fuscous mixed with grey-white, the terminal area grey-white irrorated with brown; subbasal line indistinct, black, sinuous, from costa to submedian fold, slightly defined by ochreous and with some ochreous beyond it in submedian fold; antemedial line black-brown, oblique from costa to submedian fold where it is met by the postmedial line, which is oblique to vein 6, incurved at discal fold, angled outwards at veins 4, 3, then retracted to median nervure at origin of vein 2 and curved downwards to the antemedial line at submedian fold, the antemedial line on outer side and the postmedial line on inner side defined by ochreous white; lower part of reniform indistinctly defined by black; subterminal line ochreous white defined on inner side by slight black streaks and on outer by a narrow rufous band, slightly excurved below vein 7 and at middle; an oblique blackish mark from apex; a fine waved blackish terminal line; cilia whitish mixed with fuscous and with two dark lines through them. Hind wing with the basal half white with some brown suffusion on inner area; the terminal half fuscous brown with sinuous inner edge; white patches on termen at apex, below veins 7 and 6, and an oblique patch at vein 2; cilia white with a dark patch at middle. Underside of fore wing white, an oblique dark discoidal bar confluent at submedian fold with a dark postmedial band terminating at the fold, terminal dark patches at apex and middle; hind wing with dark discoidal spot.

Hab. Tunis, 1 ♀. *Exp.* 34 millim.

8087. **Leucanitis sesquistria.**

Leucanitis sesquistria, Ev. Bull. Mosc. 1854, iii. p. 191, pl. 1. f. 6; John, Hor. Soc. Ent. Ross. xxxix. p. 613, pl. xvii. ff. 7 *b*, *c*, 8 *a*, pl. xx. f. 17 & pl. xxiii. f. 4; Staud. Cat. Lep. pal. p. 244.

Head and thorax ochreous white mixed with some reddish brown and dark brown; antennæ blackish; palpi white with some brown irroration except at base; pectus and legs white, the latter irrorated with brown; abdomen grey-brown with some white at base, the

ventral surface white. Fore wing fuscous brown with a leaden grey gloss mixed with some reddish brown and ochreous white; antemedial line black, slightly bent outwards below costa, then obliquely curved, defined on outer side by a narrow white band; reniform incompletely defined by black, rather triangular, an oblique whitish band beyond it from costa to vein 3 before the postmedial line, which is black defined on outer side at costa by ochreous white, slightly bent outwards below costa, incurved at discal fold, slightly excurved at veins 4, 3, then retracted to lower edge of reniform, then sinuous and slightly defined on inner side by white to inner margin; some slight white streaks on postmedial part of costa; subterminal line ochreous white defined on inner side by small somewhat dentate black marks; a terminal series of small black lunules; cilia white with some dark brown at tips

Fig. 67.—*Leucanitis sesquistria*, ♂. ½.

below middle and at base at tornus. Hind wing with the basal half pure white, the terminal half black-brown, its inner edge somewhat sinuous and oblique to inner margin towards tornus; the termen white from apex to vein 5 and with an oblique bar at vein 2; cilia white with dark patches at middle and tornus. Underside of fore wing white, an oblique dark discoidal band connected below with the broad postmedial band which is connected with termen by dark patches at apex, middle, and tornus, the rest of termen with dark irroration except a white subterminal bar from costa; hind wing with dark discoidal point.

Hab. Armenia; Kirghistan; W. Turkestan, Turcomania, Merv, 1 ♂, Tedschen Oasis (*Hauser*), 2 ♀, Syr Daria, Baigacum (*Koshantschikoff*), 1 ♂, 2 ♀; E. Turkestan, Korla. *Exp.* 28–32 millim.

8088. **Leucanitis picta.** (Plate CCXXVI. fig. 21.)

Leucanitis picta, Christ. Hor. Soc. Ent. Ross. xii. p. 257, pl. 7. f. 28 (1877); Staud. Cat. Lep. pal. p. 243.
Leucanitis radapicta, Staud. Cat. Lep. pal. p. 243 (1901).

Head and thorax reddish brown mixed with white and some blackish; antennæ fuscous; palpi, pectus, and legs white, the palpi and legs irrorated with fuscous; abdomen ochreous white irrorated with brown, the ventral surface white. Fore wing reddish brown mixed with white and suffused in parts with fuscous brown, the medial area white tinged with ochreous and with fuscous brown towards costa; double subbasal black striæ from costa and cell; antemedial line black defined on outer side by white, an indistinct sinuous line before it with some dark streaks before it on the veins; reniform with white annulus and its centre defined by blackish, a diffused white patch beyond it before the postmedial line, which is black, slightly bent outwards below costa, obliquely downcurved to vein 6, angled outwards at veins 4, 3, then bent inwards to lower edge of reniform and sinuous to inner margin, another faint line beyond it defined on outer side by whitish; subterminal line white defined on inner side by small somewhat dentate black marks and on outer side by rufous with minute black streaks at the veins, slightly excurved below vein 7 and at middle; the terminal area suffused with white, with an oblique black mark from apex and some black suffusion at middle of termen; a waved black terminal line; cilia white mixed with red-brown and with a brown line through them except towards apex. Hind wing white, the cell and inner area suffused with fuscous brown, the terminal half fuscous brown, its inner edge joined at vein 2 by an oblique discoidal bar; a blackish spot at middle of termen defined above by some white in discal fold and below by an oblique white bar; cilia white with some brown at base at middle. Underside white, both wings with oblique discoidal band connected below with a postmedial band confluent with patches on terminal areas at apex and middle, the band curved on fore wing, sinuous on hind wing.

Ab. 1. Fore wing with the medial area browner and with less ochreous.

Ab. 2. *radapicta*. Rather larger; fore wing more uniform brown.—Kirghistan.

Hab. Kirghistan, 1 ♂, 1 ♀; ? Syria; W. Turkestan; Transcaspia, Krasnowvodsk (*Christoph*), 1 ♂, 2 ♀, Tedschen Oasis (*Hauser*), 2 ♂, 1 ♀, Imam-baba (*Koshantschikoff*), 2 ♂, Turcomania, Issyk-Kul; E. Turkestan, Ili, Kuldja, 3 ♂, 1 ♀. *Exp.* 36–42 millim.

Sect. II. Fore tibiæ with the claws minute.

A. Hind wing with white spots on termen at apex and discal fold..... *christophi*.
B. Hind wing without white spots on termen at apex and discal fold..... *roda*.

8089. **Leucanitis christophi.** (Plate CCXXVI. fig. 22.)

Leucanitis christophi, Alph. Iris, viii. p. 200 (1895); Staud. Cat. Lep. pal. p. 243.

♂. Head and thorax pale rufous; antennæ blackish; palpi white slightly tinged with brown; pectus and legs white, the tibiæ tinged with brown, the tarsi blackish ringed with white; abdomen white tinged with brown. Fore wing pale grey suffused and irrorated with fuscous; the basal area with some rufous on inner half; subbasal black striæ from costa and cell; antemedial line strong, black, excurved and slightly waved, followed by a broad pale grey band; a faint dark medial line, excurved in the cell; reniform with brown centre and whitish annulus, narrow and constricted at middle; postmedial line black, slightly bent outwards below costa, slightly angled outwards at veins 6 and 4 and incurved between those points, at vein 3 retracted upwards to lower angle of cell, then somewhat oblique and sinuous to inner margin, the area beyond the cell and in the sinus of postmedial line with faint rufous tinge; postmedial area darker; subterminal line slight, whitish, minutely waved, angled outwards below vein 7, and incurved below vein 3; a slight waved blackish terminal line; cilia fuscous at base, brownish grey at tips. Hind wing white, the basal and inner areas tinged with brown; an oblique black discoidal lunule, its lower extremity confluent with the black terminal area; the termen with white spots at apex and discal fold and an oblique spot below vein 2; cilia white, blackish at middle and tinged with brown towards tornus. Underside of fore wing white, a black medial band confluent below vein 2 with the curved postmedial band expanding and with irregular outer edge on costal area, a black spot at apex and a patch at middle of terminal area confluent with the postmedial band; cilia white at base, blackish at tips.

♀. Fore wing with the basal area more tinged with rufous, the basal half of medial area darker and faintly tinged with rufous, the postmedial line more incurved at discal fold and produced at vein 4.

Ab. 1. ♂. Fore wing with the postmedial line obsolescent brownish.

♀. Thorax pale brown; fore wing with less blue-grey on medial and terminal areas.—Korla, Coll. Püngeler.

Hab. Russia, Urals, Eurba, 1 ♂, 1 ♀; Kirghistan, Sudersk; Mongolia, Korla, Saichin-Kette. *Exp.* ♂ 32, ♀ 36 millim.

8090. **Leucanitis roda.**

Euclidia roda, Herr.-Schäff. Schmett. Eur. ii. p. 422, Noct. ff. 561–2 (1845); John, Hor. Soc. Ent. Ross. xxxix. p. 602, pl. xvi. ff. 1 *a–c* & 2 *a–b*, pl. xix. f. 6, & pl. xxii. f. 28.

Microphisa rada, Boisd. Bull. Soc. Ent. Fr. 1848, p. xxx; Frr. Neue Beitr. pl. 576. f. 4 (1852); Guen. Noct. iii. p. 58, pl. 13. f. 12 (1852); Ev. Bull. Mosc. 1857, iv. p. 401; Staud. Cat. Lep. pal. p. 243.

Leucanitis schlumbergeri, Fuchs, Soc. Ent. xviii. p. 50 (1903).
Leucanitis beta, Kusnezov, Taskent, Izv. Turk. Otd. Russ. geogr. Obsc. iv. 8, p. 173 (1908).

Head and thorax rufous; antennæ blackish; palpi white irrorated with brown; pectus, legs, and ventral surface of abdomen white, the legs irrorated with brown, the dorsal surface of abdomen tinged and irrorated with brown. Fore wing fuscous brown with a leaden grey tinge and some whitish irroration; the base pale rufous with some whitish at inner margin; antemedial line double, curved, waved, the inner line indistinct, the outer line black, followed by a broad grey-white band; reniform with ochreous annulus and its centre defined by brown, very narrow and slightly angled inwards on median nervure; a grey-white band beyond it from costa to vein 3 before the slight blackish postmedial line, which is oblique and sinuous from costa to vein 3, then retracted to lower edge of reniform and erect and sinuous to inner margin; subterminal line slight, whitish defined on inner side by blackish, minutely waved, slightly angled outwards below vein 7 and excurved at middle; a slight waved blackish terminal line with black points at the interspaces. Hind wing with the basal half white, the cell and inner

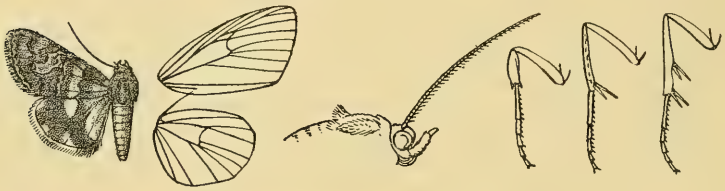


Fig. 68.—*Leucanitis roda*, ♂. ½.

area suffused with brown, the terminal half fuscous brown, its inner edge joined at lower angle of cell by an oblique fuscous discoidal bar; slight white marks on termen at apex and discal fold and an oblique bar at vein 2; cilia white with a brown patch at middle and tinged with brown towards tornus. Underside white; fore wing with oblique fuscous band from middle of costa to submedian fold where it is confluent with a curved fuscous postmedial band connected with termen by fuscous patches at apex and middle; hind wing as above but without the brown suffusion in cell and on inner area.

Ab. 1. *schlumbergeri*. Larger; fore wing more uniform blue-grey.

Ab. 2. *beta*. Fore wing blackish tinged with blue-grey, the basal area blacker.

Hab. ? Russia, Crimea; Armenia, Helenendorf (*Lederer*), 1 ♀; W. Turkestan, 1 ♂, 1 ♀, Turcomania, Saisan, Issyk-Kul; E. Turkestan, Ili, Korla. *Exp.* 34–36 millim.

Genus **SCODIONYX.**

	Type.
Scodionyx, Staud. Iris, xii. p. 397 (1899)	*mystica.*

Proboscis fully developed; palpi oblique, the 2nd joint fringed with hair in front, the 3rd moderate; frons smooth; eyes large, rounded; antennæ of male bipectinate with long branches to apex; head and thorax clothed with hair only and without crests; fore tibiæ short with strong curved claw on inner side; mid tibiæ spined; hind tibiæ with a few spines between medial and terminal spurs; abdomen with some rough hair at base but without crests. Fore wing broad, the termen evenly curved; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 3, 4 from angle of cell; 5 from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

*8091. Scodionyx mystica.

Scodionyx mysticus, Staud. Iris, xii. p. 397, pl. 5. f. 2 (1899); id. Cat. Lep. pal. p. 355.

♂. Head and thorax ochreous slightly tinged with rufous; pectus, legs, and abdomen ochreous white. Fore wing ochreous slightly tinged with rufous; subbasal line represented by a slight brown striga from costa; antemedial line represented by a brown striga from costa, then almost obsolete, curved and slightly waved;

Fig. 69.—*Scodionyx mystica*, ♂. ½.

claviform and orbicular absent; reniform pale brownish, rather quadrate and with its lower extremity produced; postmedial line indistinct, brownish, very minutely waved, excurved from costa to vein 4, then slightly incurved; subterminal line pale slightly defined by brown on each side, minutely waved, excurved from costa to vein 4, then oblique, the costal area beyond it with a slight brownish tinge; a slight waved red-brown terminal line. Hind wing ochreous white, the terminal area very faintly tinged with

rufous; the underside white, the costal area faintly tinged with rufous.

Hab. PALESTINE, Ain-Dschidi in Coll. Püngeler. *Exp.* 40 millim.

Genus **GNAMPTONYX.**

Type.
Gnamptonyx, Hmpsn. Moths Ind. ii. p. 480 (1894) ..... *vilis.*

Proboscis fully developed; palpi with the 2nd joint upturned, reaching to middle of frons and moderately scaled, the 3rd moderate, porrect and thickly scaled; frons smooth; eyes large, round; antennæ of male with fasciculate cilia; thorax clothed almost entirely with scales and without crests; tibiæ slightly fringed with hair, the fore tibiæ short with long curved claw on inner side and short claw on outer, the mid tibiæ of male dilated with a groove containing a fringe of scales, the hind tibiæ not spined; abdomen smoothly scaled and without crests. Fore wing with the apex rounded, the termen evenly curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Wings with the lines distinct ..... *vilis.*
B. Wings with the lines almost obsolete ..... *obsoleta.*

8092. Gnamptonyx vilis.

Homoptera vilis, Wlk. xxxiii. 889 (1865); Hmpsn. Moths Ind. ii. p. 480.

Head and thorax white mixed with brown; antennæ ringed with black; palpi white with some black towards extremity of 2nd and on 3rd joints; pectus, legs, and abdomen white tinged with ochreous. Fore wing white mixed with ochreous brown and black-brown; subbasal line represented by black striæ from costa and cell; antemedial line black, waved, excurved in submedian interspace, a

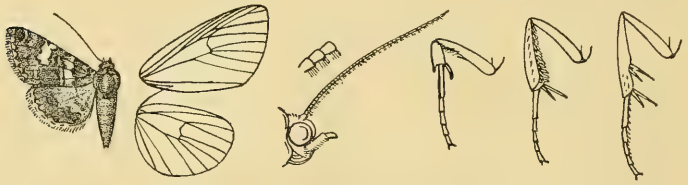


Fig. 70.—*Gnamptonyx vilis*, ♂. ½.

white band beyond it; reniform indistinctly defined by blackish and with some blackish above it on costa; a white patch beyond the cell from costa to vein 2, defined by the black postmedial line which is slightly excurved below costa and at middle and incurved at discal fold, incurved and slightly sinuous below vein 4; the postmedial area darker with two white points on costa; subterminal line ochreous white, rather diffused, excurved below vein 7 and at middle, incurved below the costa and at discal and submedian folds;

a waved blackish line just before termen with whitish points beyond it at the interspaces; a fine white line at base of cilia. Hind wing white tinged and irrorated with brown, the terminal area suffused with brown; a slight oblique dark discoidal striga; two diffused sinuous dark medial lines from vein 5 to inner margin; a white band before the sinuous blackish postmedial line; subterminal line ochreous white, diffused, sinuous; a waved blackish terminal line; cilia white with a dark line through them. Underside of both wings creamy white, the costal and terminal areas slightly tinged and irrorated with brown; hind wing with a slight curved postmedial line.

Ab. 1. More uniform greyish brown; fore wing without the white band beyond the antemedial line and patch beyond the cell; hind wing without the white band before the postmedial line.

Hab. "Off W. Coast of Africa" (s.s. 'Discovery'), 1 ♀; Sudan, Port Sudan (*Mrs. Waterfield*), 2 ♂; Somaliland, Bulhar (*Drake-Brockman*), 2 ♂, 1 ♀; Aden (*Yerbury*), 2 ♂, 1 ♀; Arabia, Muscat (*Jayaker*), 2 ♂, 2 ♀; Punjab, Campbellpur (*Yerbury*), 2 ♂, 2 ♀, Hassan Abdal (*Yerbury*), 2 ♂, 2 ♀, Rawal Pindi, 1 ♂, 1 ♀, Wuzeerabad (*Hearsey*), 1 ♂ type, Khairabad (*Yerbury*), 1 ♂, 1 ♀. *Exp.* 26–38 millim.

8093. **Gnamptonyx obsoleta**, n. sp. (Plate CCXXXII. fig. 7.)

♀. Head, thorax, and abdomen pale red-brown; palpi white, black towards tips; pectus, legs, and ventral surface of abdomen whitish, the legs tinged with ochreous, the fore tibiæ and tarsi banded black and white. Fore wing pale red-brown irrorated with dark brown and some grey; traces of a sinuous brown antemedial line; a faint dark discoidal patch with slight white marks on its outer edge and some whitish above it on costa; a faint sinuous dark medial line from the cell to inner margin; some white points on postmedial part of costa; traces of a sinuous subterminal line with whitish striga from costa; a waved blackish terminal line; a fine whitish line at base of cilia followed by a dark line. Hind wing pale reddish brown slightly irrorated with dark brown; traces of a pale sinuous subterminal line; a rather diffused dark terminal line; cilia whitish with a dark line near base. Underside of both wings brownish white, the costal areas and terminal areas except towards tornus irrorated with brown, slight dark discoidal marks.

Hab. Perim I. (*J. J. Walker*), 1 ♀ type. *Exp.* 28 millim.

Genus **HYPOGLAUCITIS**.

	Type.
Hypoglaucitis, Staud. Iris, vii. p. 284 (1894).....	*benenotata*.

Proboscis fully developed; palpi with the 2nd joint upturned, reaching to about middle of frons and moderately scaled, the 3rd porrect, moderate; frons smooth, with tuft of hair above; eyes large, round; antennæ of male ciliated; thorax clothed with scales and hair mixed and without crests; tibiæ smoothly scaled, the fore tibiæ not spined, the hind tibiæ spined; abdomen

smoothly scaled and without crests. Fore wing with the apex rounded, the termen evenly curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with dark ante- and postmedial lines ..... *benenotata.*
B. Fore wing without ante- and postmedial lines ..... *infrequens.*

8094. Hypoglaucitis benenotata.

Pandesma benenotata, Warr. P. Z. S. 1888, p. 313; Hmpsn. Moths Ind. ii. p. 480; Staud. Cat. Lep. pal. p. 245.
Hypoglaucitis moses, Staud. Iris, vii. p. 284, pl. 9. f. 17 (1894).

♂. Head and thorax grey-white tinged with brown; pectus and legs white; the palpi and fore legs irrorated with brown; abdomen white dorsally tinged with brown. Fore wing whitish tinged with brown and slightly irrorated with blackish; an oblique blackish subbasal line from costa to submedian fold; antemedial line blackish, oblique to subcostal nervure then erect and slightly

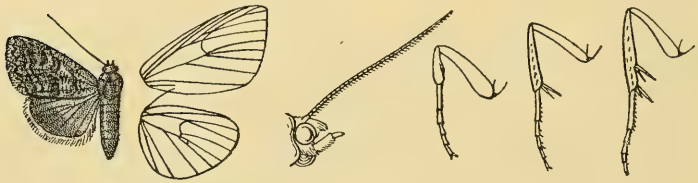


Fig. 71.—*Hypoglaucitis benenotata*, ♂. ½.

sinuous, forming black spots at costa and in and below the cell; reniform defined by rather diffused black, small and narrow; postmedial line diffused, blackish, incurved at discal fold, oblique from vein 4 to submedian fold where it forms a small spot, a slight dark shade beyond it except towards costa; subterminal line whitish defined on inner side by a dark shade and by small dentate black marks above and below vein 6, slightly excurved below vein 7 and at middle and incurved at discal fold, the area beyond it more strongly tinged with brown and with a slight oblique blackish mark from apex; a slight waved dark terminal line. Hind wing white tinged with reddish brown, the terminal area suffused with brown; cilia white. Underside of both wings white, the terminal area suffused with brown except towards tornus.

♀. Fore wing with the black markings on the lines less distinct.

Hab. Syria, 1 ♀; Algeria, C. Sahara, S. Ouedmya (*Hartert*); Egypt, Suez (*Meade-Waldo*), 1 ♂; Aden, Sheik Othman (*Nurse*), 1 ♂; Punjab, Rawal Pindi (*Yerbury*), 1 ♂ type. *Exp.* 30–32 millim.

8095. **Hypoglaucistis infrequens.** (Plate CCXXXII. fig. 29.)

Orthosia infrequens, Swinh. P. Z. S. 1884, p. 517, pl. 47. f. 11; Hmpsn. Moths Ind. ii. p. 481.

♀. Head, thorax, and abdomen pale grey-brown; palpi, legs, and ventral surface of abdomen whitish slightly irrorated with fuscous. Fore wing pale grey-brown with very slight dark irroration; reniform very faintly defined by brown; faint traces of a sinuous subterminal line. Hind wing whitish tinged with red-brown; an indistinct dark subterminal shade. Underside of both wings whitish tinged with brown and with faint brown subterminal shade.

Hab. Sind, Karáchi (*Swinhoe*), 1 ♀ type. *Exp.* 20 millim.

Genus **CLYTIE.**

	Type.
Clytie, Hübn. Verz. p. 267 (1827)	*illunaris.*
Pseudophia, Guen. Noct. iii. p. 234 (1852)	*illunaris.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching about to vertex of head and moderately scaled, the 3rd moderate, oblique; frons smooth, with tuft of hair above; eyes large, round; antennæ of male ciliated; thorax clothed with hair only and without crests; tibiæ moderately fringed with hair, the fore tibiæ not spined, the hind tibiæ spined; abdomen smoothly scaled and without crests. Fore wing with the apex rounded, the termen evenly curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the subterminal line excurved above and below vein 4.
  a. Fore wing with the claviform defined by blackish ..... *devia.*
  b. Fore wing with the claviform not defined by blackish.
    a^1. Fore wing with sinuous black streak below base of cell *scotorrhiza.*
    b^1. Fore wing without black streak below base of cell.
      a^2. Hind wing of male with the basal half white, not tinged with brown, of female yellow ..... *sancta.*
      b^2. Hind wing with the basal half tinged with brown.
        a^3. Fore wing with dentate black marks before subterminal line ..... *illunaris.*
        b^3. Fore wing without dentate black marks before subterminal line ..... *haifæ.*
B. Fore wing with the subterminal line excurved at vein 4.
  a. Fore wing with the subterminal line ochreous.
    a^1. Fore wing with the ante- and postmedial lines not defined by whitish.
      a^2. Fore wing with the ante- and postmedial lines conjoined at inner margin..... *distincta.*
      b^2. Fore wing with the ante- and postmedial lines not conjoined at inner margin.
        a^3. Hind wing whitish tinged with brown ..... *syrdaja.*
        b^3. Hind wing fulvous yellow..... *arenosa.*
    b^1. Fore wing with the ante- and postmedial lines defined by whitish ..... *syriaca.*
  b. Fore wing with the subterminal line not ochreous.
    a^1. Fore wing with the ground-colour whitish.

a^2. Fore wing suffused with brown; hind wing with the basal area tinged with red-brown ..... *sublunaris.*
b^2. Fore wing thickly irrorated with fuscous; hind wing with the basal area tinged with yellowish..... *nabatæa.*
b^1. Fore wing pale grey-brown tinged with reddish brown; hind wing with the basal area tinged with red-brown.
a^2. Fore wing with the subterminal line defined on inner side by black towards costa ..... *delunaris.*
b^2. Fore wing with the subterminal line not defined on inner side by black towards costa ..... *terrulenta.*

8096. **Clytie devia.** (Plate CCXXXI. fig. 14.)

Pandesma devia, Swinh. P. Z. S. 1884, p. 520, pl. 48. f. 3; Hmpsn. Moths Ind. ii. p. 481.

♂. Head, thorax, and abdomen grey-white suffused with brown; tarsi blackish ringed with white. Fore wing grey-white tinged and slightly irrorated with brown; obliquely placed subbasal blackish points below costa and in cell; antemedial line blackish, obsolescent in cell and towards inner margin, oblique, slightly angled inwards in submedian fold; claviform defined by diffused blackish; orbicular a minute blackish annulus with whitish centre; reniform whitish defined by blackish, small; postmedial line blackish, slightly excurved below costa, then oblique and slightly sinuous; postmedial area with slight diffused dark streaks in the interspaces; subterminal line whitish, slightly waved, excurved below vein 7 and at middle, defined on inner side by a black spot below vein 7, then by slight somewhat dentate blackish marks; a waved dark terminal line with some slight diffused dark marks before it; cilia with two faint diffused dark lines through them. Hind wing ochreous white, the terminal area fuscous brown with a rather diffused whitish subterminal line from apex to termen at submedian fold; cilia white. Underside of both wings white with fuscous brown subterminal shade and the terminal area tinged with brown.

♀. Fore wing slightly paler and more ochreous; hind wing with the terminal area paler and the subterminal line less well defined.

Hab. Biluchistan, Ormara (*Cumming*), 1 ♂; Sind, Karáchi (*Swinhoe*), 1 ♂, 1 ♀ type, Sonda (*Swinhoe*), 1 ♀. *Exp.* 42–46 millim.

*8097. **Clytie scotorrhiza.** (Plate CCXXXI. fig. 15.)

Pseudophia scotorrhiza, Püng. ined.

♀. Head and thorax pale reddish brown mixed with whitish; tarsi blackish ringed with white; abdomen grey-white irrorated with brown and with slight dark segmental lines. Fore wing whitish tinged with red-brown and irrorated with dark brown; subbasal line represented by black striæ from costa and cell; a diffused black streak in submedian fold before the antemedial line,

which is black, angled outwards in upper part of cell and inwards at median nervure, then oblique, sinuous; orbicular a small whitish spot defined by blackish; reniform whitish defined by blackish, moderate; postmedial line black defined on inner side by whitish, excurved slightly below costa, then oblique and very slightly waved; subterminal line white defined on inner side by small dentate black marks, excurved below vein 7, angled and waved above and below vein 5, excurved and waved at middle, and angled inwards below vein 3; a terminal series of small whitish spots defined by slight black lunules. Hind wing white, the terminal area broadly fuscous brown; cilia white; the underside white, the terminal area irrorated with brown, a terminal series of small dark lunules.

Hab. Palestine, Dead Sea, type † ♀ in Coll. Püngeler. *Exp.* 42 millim.

8098. **Clytie sancta.** (Plate CCXXXI. fig. 16 ♂, 17 ♀.)

Pseudophia sancta, Staud. Iris, x. p. 301 (1897); id. Cat. Lep. pal. p. 245.

♂. Head and thorax pale grey tinged with brown; antennæ brown, the shaft ringed with white towards base; tarsi blackish ringed with white; abdomen white dorsally tinged with brown. Fore wing grey-white faintly tinged with brown and thickly irrorated with dark brown; slight subbasal blackish points below the costa and cell; antemedial line blackish, rather diffused, oblique to submedian fold, then erect; a minute black point in middle of cell; reniform small, white defined by blackish, constricted at middle; postmedial line blackish, rather diffused, slightly excurved below costa, incurved below vein 4; subterminal line whitish, waved, excurved below vein 7 and at middle, defined on inner side by a black spot below vein 7, then by slight black lunules; a fine waved blackish terminal line. Hind wing white with a broad diffused fuscous subterminal shade, the area beyond it tinged with grey-brown. Underside of both wings white with a dark subterminal shade except towards inner margins.

Ab. 1. Head, thorax, and fore wing more ochreous, the last with slight dark irroration and the markings obsolescent.

♀. Fore wing much more strongly suffused and irrorated with brown; hind wing with the basal half yellow, the postmedial area black, the terminal area grey-brown.

Hab. Algeria; Egypt, Suez (*J. J. Walker*), 1 ♂, Libyan Desert, Gronah (*King*), 2 ♂; Sudan, Port Sudan (*Mrs. Waterfield*), 1 ♂, 2 ♀; Aden (*Yerbury*), 1 ♂; Syria; Palestine. *Exp.* 40–52 millim.

8099. **Clytie illunaris.**

Noctua illunaris, Hübn. Eur. Schmett., Noct. ff. 565, 574 (1818); Godt. Lép. Fr. v. p. 126, pl. 55. ff. 3–4; Geyer, Eur. Schmett., Noct. f. 868; Mill. Icones, ii. p. 162, pl. 68. f. 9. & iii. p. 239, pl. 126. ff. 8, 9; Staud. Cat. Lep. pal. p. 245.

Pseudophia gracilis, Bang-Haas, Iris, xx. p. 74, pl. iii. f. 10 (1907).

Head, thorax, and abdomen ochreous white slightly tinged with brown; antennæ fuscous; palpi at sides and fore and mid legs tinged with fuscous. Fore wing ochreous white tinged with brown and slightly irrorated with fuscous; a faint dentate dark subbasal line from costa to submedian fold; antemedial line indistinct, dark, oblique, dentate towards costa, then waved; a minute whitish spot defined by some fuscous scales in middle of cell; reniform very small, whitish defined by fuscous scales; postmedial line indistinct, dark, slightly bent outwards below costa, slightly angled inwards at discal fold and incurved below vein 4; subterminal line faint, whitish, angled outwards below vein 7, then waved, defined on inner side by a black spot below vein 7, then by a series of small dentate black marks; a fine waved dark terminal line and slight dark line near base of cilia. Hind wing white suffused with ochreous brown;

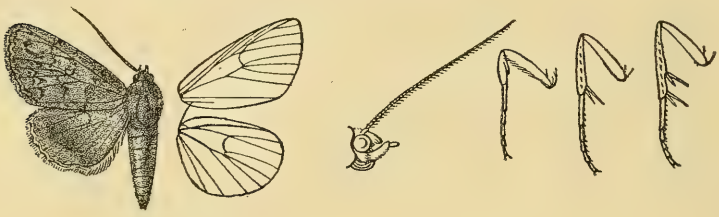


Fig. 72.—*Clytie illunaris*, ♂. ½.

a diffused dark subterminal shade; a waved dark terminal line and faint line near base of cilia. Underside of both wings white with a diffused dark subterminal shade except towards inner margins.

Ab. 1. Browner; fore wing with the markings obsolescent.

Ab. 2. Much more ochreous; fore wing with the markings obsolescent.

Ab. 3. Fore wing suffused with dark red-brown except the basal inner area, the markings obsolescent except the subterminal line.

Hab. S. France, Zeller, Frey, & Leech Colls.; Spain, Catalonia, Andalusia, Leech Coll.; Italy, Leghorn, Zeller Coll.; Sicily; Dalmatia. *Exp.* 38–46 millim.

Larva. Kirby, Butt. & Moths Eur. p. 281; Hffm. Raup. p. 147.

Green when young, then reddish. Food-plant, *Tamarix gallica*. 7 & 9.

8100. **Clytie haifæ.** (Plate CCXXXI. fig. 18.)

Pseudophia haifæ, Habich, Verh. zool.-bot. Ges. Wien, lv. p. 21 (1905).

♀. Head and thorax brown mixed with grey; antennæ blackish; palpi with some black mixed; pectus and legs pale ochreous, the fore and mid legs suffused with brown in front, the tarsi black with pale rings; abdomen pale ochreous, dorsally tinged with brown. Fore wing brown mixed with grey; a curved blackish subbasal line from costa to submedian fold; antemedial line blackish, oblique,

sinuous; a whitish point slightly defined by black in middle of cell; reniform indistinctly defined by blackish, small; postmedial line black, excurved below costa, then rather oblique and slightly sinuous, a faint dark shade beyond it; subterminal line ochreous white faintly defined on each side by fuscous brown, excurved below vein 7, then slightly waved; a slight waved dark terminal line with ochreous points beyond it at the veins. Hind wing ochreous white, the inner area tinged with red-brown; a broad diffused dark subterminal shade, the area beyond it suffused with grey-brown leaving a pale mark towards tornus; cilia ochreous white. Underside of both wings ochreous white; fore wing with the costal and terminal areas irrorated with brown; hind wing with some brown irroration on costal area towards apex.

♂. Head, thorax, and fore wing rather paler, the last with the ante- and postmedial lines less distinct, the reniform with white marks in its upper and lower parts, the subterminal line with more distinct black marks before it; hind wing with the subterminal shade less distinct.

Hab. Algeria, El Kantara; Egypt, Alexandria (*Mathew*), 1 ♀; Syria. *Exp.* 46 millim. Type † in Coll. Habich.

Larva. Food-plant, Nettle.

*8101. Clytie distincta.

Pseudophia distincta, Bang-Haas, Iris, xx. p. 75, pl. 3. f. 11 (1907).

♂. Head and thorax pale grey irrorated with fuscous; abdomen whitish tinged with brown. Fore wing pale grey irrorated with fuscous; antemedial line blackish, excurved below costa, then oblique; reniform defined by blackish, small; postmedial line blackish, obsolescent to vein 2, then distinct, excurved to vein 4, then incurved and touching the antemedial line at inner margin; subterminal line whitish defined on inner side by blackish suffusion, excurved below vein 7 and incurved at discal fold, a blackish patch beyond it at apex; a terminal series of small black lunules; a fine pale line at base of cilia followed by a blackish line. Hind wing whitish tinged with brown; the terminal area suffused with fuscous narrowing to tornus; cilia white. Underside of both wings white, the terminal area suffused with fuscous.

Hab. S.E. Transcaspia. *Exp.* 34 millim. This species is unknown to me.

8102. Clytie syrdaja. (Plate CCXXXI. fig. 19 ♂, 20 ♀.)

Pseudophia syrdaja, Bang-Haas, ined.

♂. Head and thorax grey mixed with fuscous; abdomen grey irrorated with fuscous. Fore wing grey faintly tinged with brown and thickly irrorated with fuscous; a faint dark sinuous antemedial line; a dark point in middle of cell and slight discoidal lunule; postmedial line faint, dark, excurved below costa and incurved below vein 4; subterminal line pale brownish defined on

each side by fuscous, excurved below vein 7 and at middle; a waved dark terminal line with black points at the interspaces. Hind wing whitish tinged with brown and with slight dark irroration; a broad diffused fuscous subterminal shade. Underside of both wings whitish, the costal and terminal areas irrorated with brown.

♀. Thorax and fore wing paler, the latter with the ante- and postmedial lines more distinct, reniform with pale centre, constricted at middle, subterminal line whitish distinctly defined on each side by fuscous and with small black spot on its inner side below vein 7; hind wing with the basal area tinged with rufous, the terminal half black with some grey on termen.

Hab. W. Turkestan, Aulic Ata, 1 ♂, 1 ♀. *Exp.* 42 millim.

*8103. **Clytie arenosa.** (Plate CCXXXII. figs. 1 ♂, 2 ♀.)

Clytie arenosa, Roths. Nov. Zool. xx. p. 128 (1913).

♀. Head and thorax fulvous ochreous; pectus whitish; legs ochreous white irrorated with brown; abdomen pale ochreous slightly irrorated with brown. Fore wing fulvous ochreous irrorated with brown; antemedial line indistinct, fuscous, oblique, angled inwards at vein 1; a fuscous point in middle of cell; reniform slightly defined by fuscous, small, constricted at middle; postmedial line indistinct, fuscous slightly defined on inner side by ochreous, slightly excurved below costa and incurved at discal fold, incurved below vein 4; subterminal line ochreous defined on inner side by black, angled outwards at vein 7 where there is a dentate black spot on its inner side, slightly angled inwards above and below vein 5, angled outwards at vein 4, then incurved; a waved fuscous terminal line. Hind wing fulvous ochreous; a broad fuscous postmedial band, its outer edge slightly waved; a fuscous terminal line; cilia ochreous white; the underside ochreous white, the terminal area slightly irrorated with brown.

Ab. 1. Fore wing with the ante- and postmedial lines more distinct, the subterminal line less strongly defined by black.

♂. Fore wing paler, the ante- and postmedial lines less distinct; hind wing yellowish white, the postmedial band replaced by a shade.

Hab. Algeria, C. Sahara, S. Oued Mya (*Hartert*), type † ♂, ♀ in Coll. Rothschild. *Exp.* 38–46 millim.

8104. **Clytie syriaca.** (Plate CCXXXI. fig. 21.)

Ophiusa syriaca, Bugnion, Ann. Soc. Ent. Fr. vi. p. 442, pl. 16. f. 2 (1837); Staud. Cat. Lep. pal. p. 245.

Ophiusa gentilitia, Herr.-Schäff. Schmett. Eur. ii. p. 273 (1845), Noct. f. 273; Frr. Neue Beitr. pl. 505. f. 4.

♂. Head, thorax, and abdomen grey-white slightly tinged with brown; antennæ brown except the shaft above towards base; palpi and sides of frons and the fore and mid legs tinged with fuscous. Fore wing grey-white tinged and faintly irrorated with brown;

antemedial line whitish, oblique, excurved in submedian interspace; a dark point in middle of cell; reniform small, whitish slightly defined by brown, constricted at middle; postmedial line whitish faintly defined on outer side by brown, excurved below costa, slightly incurved at discal fold, oblique and slightly sinuous below vein 4; subterminal line ochreous defined on inner side by red-brown and on outer by fuscous, angled outwards at vein 7 and excurved at middle; a terminal series of blackish points; cilia with a fine white line at middle and white tips. Hind wing whitish tinged with ochreous brown, the terminal area grey with a broad fuscous subterminal shade except towards costa; cilia white tinged with brown at base. Underside of both wings white, the terminal areas suffused with grey-brown.

Ab. 1. Hind wing tinged with pale brown.

Ab. 2. Fore wing with dentate black spot before the subterminal line below vein 7.

Ab. 3. Fore wing thickly irrorated with fuscous.

Hab. S. Russia, Urals; Armenia; Asia Minor, Pontus, Lydia, Amanus Mts., 1 ♂; Syria; W. Turkestan, Turcomania, Ferghana; E. Turkestan, Kashgar, Ili. *Exp.* 36–44 millim.

*8105. **Clytie sublunaris.** (Plate CCXXXII. fig. 3.)

Pseudophia sublunaris, Staud. Stett. Ent. Zeit. 1889, p. 56; id. Cat. Lep. pal. p. 245.

Head and thorax red-brown mixed with whitish; tarsi fuscous with pale rings; abdomen grey irrorated with fuscous brown. Fore wing whitish suffused with red-brown and slightly irrorated with blackish; subbasal line represented by slight black spots below costa and cell; antemedial line blackish slightly defined on each side by whitish, oblique, sinuous; a minute whitish spot defined by black in middle of cell; reniform whitish defined by blackish and with some red-brown suffusion round it, very small and constricted at middle; postmedial line blackish defined on inner side by whitish, oblique, slightly excurved below costa and at middle; subterminal line white defined on inner side by small black marks and with red-brown suffusion before it, strongly excurved below vein 7 and at middle where there are more prominent black marks before it, strongly incurved at discal fold and below vein 3, a diffused brown shade beyond it running obliquely to apex; a slight waved brown terminal line with dark points at the interspaces; cilia with a brown line through them. Hind wing whitish suffused with rufous and with a broad blackish subterminal shade with some whitish beyond it at submedian fold; cilia white; the underside white irrorated with brown, an indistinct brownish discoidal lunule and sinuous subterminal shade.

Hab. W. Turkestan, Issyk-Kul; Mongolia, Aksu in Coll. Püngeler. *Exp.* 42 millim.

8106. **Clytie nabatæa.** (Plate CCXXXII. fig. 4.)

Pseudophia nabatæa, Püng. ined.

♀. Head and thorax reddish brown mixed with ochreous; pectus, legs, and abdomen ochreous irrorated with dark brown. Fore wing greyish ochreous suffused with reddish brown and thickly irrorated with dark brown; antemedial line ochreous faintly defined on inner side by blackish, oblique, sinuous; a whitish point faintly defined by blackish in middle of cell; reniform very small and narrow, faintly defined by blackish and with slight pale marks in its upper and lower parts; postmedial line ochreous defined on outer side by black, excurved to vein 4, then oblique and slightly sinuous; subterminal line ochreous, acutely angled outwards below vein 7 to near termen and with a dentate black spot before it, then slightly waved; a slight waved black terminal line. Hind wing white tinged with ochreous yellow, the terminal area broadly suffused with fuscous brown; a waved black terminal line with some whitish before it towards tornus; cilia white. Underside of both wings whitish irrorated with brown except the cell and inner area; fore wing with brown subterminal shade angled outwards below vein 7; hind wing with brown subterminal shade interrupted at middle.

Hab. Palestine, 1 ♀. *Exp.* 34 millim. Type † ♀ in Coll. Püngeler.

8107. **Clytie delunaris.** (Plate CCXXXII. fig. 5.)

Pseudophia delunaris, Staud. Stett. Ent. Zeit. 1889, p. 56; id. Cat. Lep. pal. p. 245.

♂. Head and thorax reddish brown mixed with some greyish; pectus ochreous white; abdomen whitish dorsally suffused with reddish brown, ventrally slightly irrorated with brown. Fore wing reddish ochreous thickly irrorated with dark brown; a slight curved blackish subbasal line from costa to submedian fold; a diffused somewhat oblique reddish ochreous antemedial line, slightly sinuous and defined on inner side by blackish towards costa; reniform indistinctly defined by blackish, very small and constricted at middle; a postmedial black striga from costa, then a diffused somewhat sinuous and oblique reddish ochreous line to inner margin; subterminal line ochreous, defined on inner side by black towards costa and inner margin, acutely angled outwards to near termen below vein 7 where there is a dentate black mark before it, slightly excurved at middle; a waved black terminal line with ochreous points beyond it at the veins. Hind wing ochreous whitish tinged with red-brown; a blackish subterminal shade diffused on inner side, the area beyond it rather greyer; a waved black terminal line; cilia white tinged with ochreous brown except at tips. Underside of both wings white irrorated with brown except the cell and inner area, slight dark discoidal marks, the terminal areas suffused with fuscous brown.

Hab. W. Turkestan, Turcomania, Tekke, 1 ♂; E. Turkestan, Ili; Afghanistan, Kuschk, 1 ♂. *Exp.* 38 millim.

*8108. **Clytie terrulenta.** (Plate CCXXXII. fig. 6.)

Pseudophia terrulenta, Christ. Iris, vi. p. 93 (1893); Staud. Cat. Lep. pal. p. 245.

Pseudophia gentilis, Staud. Iris, x. p. 300, pl. 9. f. 21 (1897); id. Cat. Lep. pal. p. 245.

♂. Head, thorax, and abdomen grey mixed with brown and slightly tinged with reddish; tarsi fuscous with pale rings. Fore wing grey irrorated and striated with fuscous brown and slightly tinged with reddish; subbasal line represented by slight black striæ from costa and cell; antemedial line slight, black, oblique, sinuous; a whitish point defined by black in middle of cell; reniform whitish defined by black, very small and constricted at middle; postmedial line black, excurved below costa, very slightly incurved at discal fold, incurved below vein 4; the postmedial area strongly irrorated with black and with a diffused black line beyond the postmedial line; subterminal line whitish, obsolescent towards costa, angled outwards below vein 7 to near termen where there is a dentate black mark before it, then defined on inner side by black marks, oblique to below vein 5, then slightly sinuous; a slight waved black terminal line with black points at the interspaces. Hind wing greyish suffused with brown, the terminal area darker; a slight waved dark terminal line; cilia white; the underside whitish irrorated with brown, a slight dark discoidal lunule and sinuous subterminal shade.

♀. Redder brown, the abdomen and hind wing rufous.

Hab. ARMENIA, Lagodechi, Eldar; PALESTINE, Jordan Valley in Coll. Püngeler; W. TURKESTAN, Turcomania, Merv; E. TURKESTAN, Ili. *Exp.* 32 millim.

Genus **PERICYMA.**

	Type.
Pericyma, Herr.-Schäff. Schmett. Eur. ii. p. 429 (1845).....	*albidentaria.*
Alamis, Guen. Noct. iii. p. 3 (1852)	*umbrina.*
Dugaria, Wlk. xiii. 1075 (1857)	*glaucinans.*
Mœpa, Wlk. xxxiii. 915 (1865)	*albidens.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd rather long; frons smooth, with slight tuft of hair above; eyes large, round; antennæ of male typically with fasciculate cilia; thorax clothed with scales and hair mixed, the pro- and metathorax with spreading crests; fore tibiæ of female broadly fringed with hair, the mid and hind tibiæ moderately fringed with hair, the fore and hind tibiæ not spined; abdomen with dorsal series of crests, the crests on 3rd and 4th segments large. Fore wing with the apex rounded, the termen evenly curved and hardly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. (*Mœpa.*) Antennæ of male bipectinate with short branches ending in fasciculate cilia, the branches shorter on lower side, the apex simple; the fore tibiæ fringed with long hair on outer side, the mid tibiæ with tuft of long hair above from base, the hind tibiæ with slight tufts of hair at middle and extremity; underside of hind wing without androconia or woolly hair.

8109. **Pericyma albidens.**

Mœpa albidens, Wlk. xxxiii. 916 (1865); Hmpsn. Moths Ind. ii. p. 476.

♂. Head and thorax red-brown mixed with dark brown and some grey, the tegulæ with black medial line; palpi white in front; pectus white; legs whitish mixed with black-brown, the tarsi black ringed with white; abdomen red-brown, the crests blackish, the ventral surface white. Fore wing reddish brown suffused in parts with fuscous, the antemedial area darker; subbasal line black, waved, from costa to submedian fold; antemedial line double, black, sinuous; the medial area with traces of three double sinuous

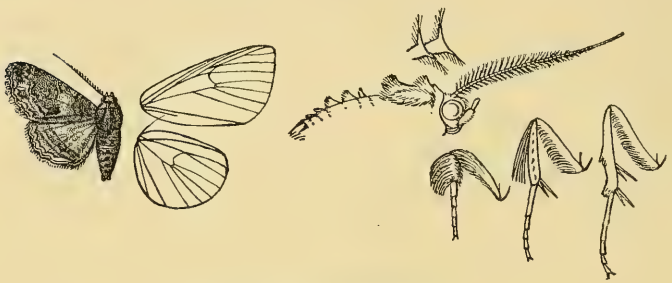


Fig. 73.—*Pericyma albidens*, ♂. ½.

lines, the third excurved beyond the cell; reniform slightly defined by black and with some white scales on its outer edge, somewhat constricted at middle; a black patch in submedian interspace before the postmedial line, which is black, oblique, and sinuous to vein 6, angled inwards at discal fold and outwards at vein 4, then oblique and dentate, some pale points beyond it on costa; subterminal line whitish, slightly defined on each side by brown and with a series of black points on it forming slight dentate marks below costa, oblique, sinuous, a dark patch beyond it at middle; a dentate black line before termen and a fine whitish line at base of cilia. Hind wing ochreous tinged with red-brown, the terminal area suffused with red-brown except at apex; traces of a double slightly sinuous antemedial line and of three lines beyond the cell from discal fold to inner margin; a treble blackish subterminal line obsolescent towards costa and followed by a faint rufous line; a waved black line before termen; a white line at base of cilia followed by a blackish line; the underside ochreous white, the costal and terminal

areas slightly irrorated with brown, a slight blackish discoidal lunule, double minutely waved brown subterminal line, a series of minute black lunules before termen.

♀. Fore wing tinged with grey; the medial area with the double black lines distinct, some black suffusion before and beyond the reniform, the patch in submedian interspace indistinct; hind wing with the antemedial line and the lines beyond the cell more distinct.

Ab. 1. The type; rather redder brown; fore wing with the lines of medial area indistinct, the postmedial line whiter; hind wing with the lines of medial area indistinct.

Hab. Sikhim (*Dudgeon*), 1 ♀; Madras, Gooty (*Campbell*), 1 ♂, 1 ♀, Coimbatore (*Walhouse*), 1 ♀ type. *Exp.* 28–30 millim.

Sect. II. Antennæ of male with fasciculate cilia.

A. Antennæ of male strongly dilated just beyond middle; the femora and tibiæ tufted with long hair.

8110. Pericyma cruegeri.

Homoptera cruegeri, Butl. Trans. Ent. Soc. 1886, p. 411.

♂. Head, tegulæ, and prothorax pale rufous, the rest of thorax deep red-brown, the tegulæ with two red-brown lines; palpi reddish

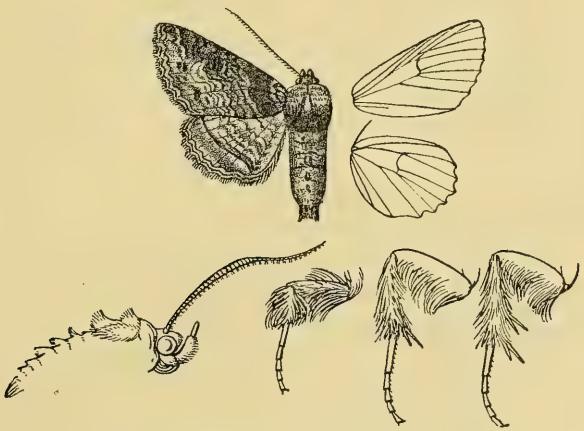


Fig. 74.—*Pericyma cruegeri*, ♂. ½.

white, brown at side; pectus ochreous white; tarsi blackish with pale rings; abdomen pale rufous, the crests darker, the ventral surface ochreous white. Fore wing whitish suffused with rufous;

a deep red-brown band from just beyond the subbasal to just beyond the antemedial line; subbasal line dark, oblique, waved, from costa to vein 1; antemedial line black, inwardly oblique, sinuous; medial area with four slight double waved red-brown lines filled in with whitish, the first three inwardly oblique, the fourth excurved beyond the cell, then oblique, the costal area between them suffused with red-brown; a slight dark point in middle of cell; reniform with slight incomplete waved whitish annulus, constricted at middle; postmedial line black, arising below costa, sinuous, angled inwards at discal fold, oblique below vein 4, an indistinct brown line beyond it; a dark red-brown patch on postmedial part of costal area with two white points on costa; subterminal line indistinct, pale, slightly defined on each side by red-brown; a waved black line before termen; cilia with a fine pale line at base. Hind wing greyish suffused with rufous; two indistinctly double sinuous medial lines filled in with whitish and two similar minutely waved postmedial lines; a slightly sinuous black subterminal line with a finer sinuous black line before it from vein 6 to inner margin; a waved black line before termen and a fine pale line at base of cilia; the underside ochreous white irrorated with red-brown except on basal and inner areas, a red-brown discoidal spot with two oblique striæ above it from costa, three slightly waved lines beyond the cell, a waved postmedial line, a subterminal line, and series of black points before termen.

♀. Fore wing suffused with red-brown from near base to beyond the postmedial line.

Ab. 1. ♂. Fore wing with the dark subbasal area and postmedial costal patch edged by white on outer side.

Ab. 2. ♀. Fore wing suffused with greenish fuscous from beyond the antemedial to beyond the postmedial line.

Hab. Borneo, Sandakan (*Pryer*), 1 ♀; N. Australia, Port Darwin (*Lyell*), 1 ♀; Queensland, 1 ♂, 1 ♀, Gayndah, 1 ♀ type, Brisbane (*Turner*), 2 ♂, 2 ♀. *Exp.* 46–50 millim.

B. Antennæ of male normal.
  a. Legs of male, pectus, and ventral surface of abdomen tufted with long hair.
    a^1. (*Alamis.*) Underside of male with the basal half of fore wing and whole of hind wing clothed with silky androconia.
      a^2. Hind wing with double slightly sinuous black subterminal line ..... *turbida*.
      b^2. Hind wing with double dentate subterminal line ..... *umbrina*.

8111. **Pericyma turbida.** (Plate CCXXXII. fig. 8.)

Homoptera turbida, Butl. A. M. N. H. (4) xvii. p. 408 (1876).

♂. Head and thorax red-brown mixed with some grey, the patagia with dark line near base and some dark scales at tips, the prothorax with dark line; palpi with some black-brown at sides; tarsi black ringed with whitish; abdomen ochreous suffused with

red-brown, the crests dark tipped with white, the two terminal segments with brown bands, the ventral surface pale ochreous. Fore wing violaceous grey tinged and slightly irrorated with pale red-brown; a slight oblique waved black subbasal line from costa to vein 1, the area from just beyond it to just beyond the antemedial line suffused with red-brown and some black-brown and grey; the antemedial line slight black, inwardly oblique, sinuous; orbicular a minute yellowish spot defined by red-brown; reniform indistinctly defined by brown and with red-brown in centre, oblique, its upper extremity somewhat produced; the medial area with two faint oblique waved red-brown lines defined on outer side by whitish, and a similar line excurved beyond the cell then incurved, the area between these lines filled in with red-brown suffusion on costal area; postmedial line black, dentate, rather oblique to vein 6, angled inwards at discal fold and oblique below vein 4, the costal area beyond it suffused with red-brown narrowing to a point at apex and with some pale points on costa; subterminal line indistinct, diffused, rufous, oblique and waved, defined on inner side by white from costa to vein 5; a waved black line before termen and fine waved red-brown terminal line; cilia with a red-brown line through them and whitish tips. Hind wing violaceous grey tinged and slightly irrorated with pale red-brown; two indistinctly double minutely waved medial lines filled in with whitish and two similar postmedial lines except on costal area; a slightly sinuous black subterminal line with a fine line before it, obsolescent towards costa, with an indistinct rather diffused rufous line beyond it; a fine sinuous blackish line before termen; cilia with a fine pale line at base; the underside clothed with ochreous white woolly hair, a slight crenulate blackish terminal line.

Hab. Rodriguez (*Gulliver*), 1 ♂ type. *Exp.* 50 millim.

8112. **Pericyma umbrina.**

Alamis umbrina, Guen. Noct. iii. p. 4 (1852), ♀; Hmpsn. Moths Ind. ii. p. 474.
Alamis albicincta, Guen. Noct. iii. p. 4 (1852).
Alamis hypophæa, Guen. Noct. iii. p. 4 (1852), ♂.
Alamis continua. Wlk. xxxiii. 877 (1865).
Homoptera plumipes, Wlk. xxxiii. 888 (1865).

♂. Head and thorax deep red-brown slightly irrorated with grey, the tegulæ with blackish medial line; antennæ with the basal joint white at outer side; palpi black-brown; pectus ochreous white; legs brown, the tarsi blackish ringed with white; abdomen greyish suffused with red-brown, the dorsal crests darker, the ventral surface ochreous white. Fore wing red-brown mixed with greyish; a waved black subbasal line from costa to submedian fold; antemedial line indistinctly double, black, waved, rather inwardly oblique; the medial area with three indistinct double waved lines, the two first outwardly oblique, the third excurved beyond the cell, then oblique; a minute pale point defined by black in middle of

cell; reniform indistinctly defined by black and with a whitish point at lower extremity; postmedial line black, oblique and sinuous to vein 6, incurved at discal fold, slightly angled outwards at veins 4, 3, then incurved, an obscure dark line beyond it and some whitish points on costa; subterminal line indistinct, pale, minutely waved, faintly defined by brown; a fine waved black line before termen and fine pale line at base of cilia. Hind wing red-brown mixed with some greyish; two very indistinct double dark sinuous medial lines; a slight sinuous black postmedial line from

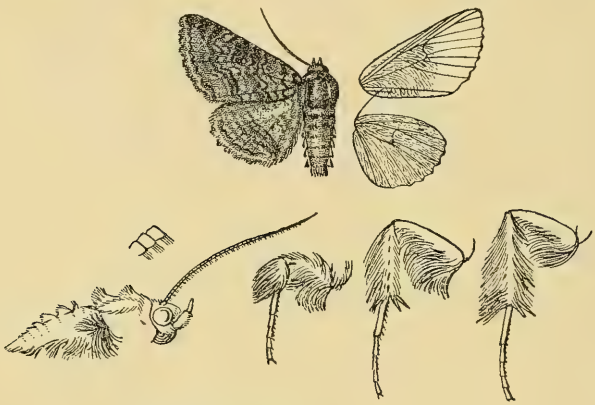


Fig. 75.—*Pericyma umbrina*, ♂. ½.

vein 6 to inner margin; an indistinct double minutely waved subterminal line; a fine waved black line before termen and fine whitish line at base of cilia. Underside clothed with leaden-grey androconia except the terminal area of fore wing.

♀. Underside of wings whitish tinged and irrorated with brown; both wings with indistinct waved brown lines beyond the cell, similar postmedial and subterminal lines, and series of minute black lunules before termen.

Ab. 1. Fore wing darker brown except the terminal area.

Ab. 2. Both wings dark brown.

Ab. 3. Fore wing with the basal area suffused with fuscous black.

Ab. 4. *albicincta*. Fore wing with diffused white beyond the antemedial line, the reniform irrorated with white; both wings with the subterminal line defined on inner side by white, the terminal area suffused with white except at apex and middle.

Hab. Kashmir, Kuijar (*McArthur*), 1 ♂, 2 ♀; Punjab, 2 ♀, Kulu, Sultanpur (*G. Young*), 1 ♂, 1 ♀, Dharmsála (*Hocking*), 4 ♂, 2 ♀, Simla (*Harford*), 1 ♂, 2 ♀, Cambellpur (*Yerbury*), 4 ♂, 1 ♀, Dehra Dun, 1 ♀, Jubbulpur (*F. Butler*), 1 ♂, Wuzeerabad (*Hearsey*), 5 ♂, 1 ♀ type *continua*, Manpuri, 1 ♀,

Moghal Serai (*Betton*), 1 ♂, Almorah (*Boys*), 1 ♂ type *plumipes*; Sikhim (*Lidderdale, Möller*), 2 ♂, 3 ♀; Assam, Silhet; Bombay, Mhow (*Forsayeth*), 1 ♂, 1 ♀. *Exp.* 30–46 millim.

Larva. Forsayeth, Trans. Ent. Soc. 1884, p. 412, pl. 15. f. 9.

Green, the dorsal area whitish, a yellow lateral line with blue specks on it; head with yellow line between the eyes; the 1st pair of prolegs aborted, the 2nd pair rudimentary. Food-plant, a small thorny shrub.

Pupa covered with white efflorescence, in a leafy case spun together with silk.

*b*¹. (*Dugaria.*) Underside of hind wing of male with a patch of silky brown downturned hair beyond the cell.

8113. Pericyma glaucinans.

Alamis glaucinans, Guen. Noct. iii. p. 6 (1852); Hmpsn. Ill. Het. B.M. ix. p. 109, pl. 165. ff. 1, 7, 15; id. Moths Ind. ii. p. 475.
Alamis ligilla, Guen. Noct. iii. p. 6 (1852).
Homoptera infligens, Wlk. xiii. 1068 (1857).
Homoptera solita, Wlk. xiii. 1068 (1857).
Homoptera antica, Wlk. xxxiii. 887 (1865).
Hypogramma validula, Wlk. xxxiii. 893 (1865).

♂. Head, thorax, and abdomen red-brown mixed with ochreous, the tegulæ with three fine brown lines; palpi pale in front, dark

Fig. 76.—*Pericyma glaucinans*, ♂. ½.

brown at sides; pectus, legs, and ventral surface of abdomen white tinged with red-brown, the tarsi blackish ringed with white. Fore wing red-brown; a faint waved brown subbasal line from costa to submedian fold; antemedial line indistinctly double, brown,

minutely waved and inwardly oblique; the medial area with three indistinct double sinuous brown lines, the two first inwardly oblique, the third excurved beyond the cell, then oblique; a minute dark point in middle of cell; reniform indistinctly defined by brown; postmedial line indistinctly double, bent outwards below costa, then sinuous, incurved at discal fold and oblique below vein 4, some pale points beyond it on costa; subterminal line very indistinct, pale, waved, faintly defined by brown; a fine crenulate blackish line before termen and fine pale line at base of cilia. Hind wing red-brown, the inner margin white; a very indistinct double sinuous antemedial line and two very indistinct treble sinuous lines beyond the cell; a slight treble sinuous subterminal line with indistinct rather diffused rufous line beyond it; a fine waved blackish line before termen; cilia with a white line at base followed by a dark line; the underside white, the patch of silky hair beyond the cell brownish, the costal area with brown bars, a slightly sinuous dark subterminal line from the patch of hair to inner margin and a series of black points before termen.

♀. Hind wing on underside without the patch of silky brown hair beyond the cell.

Ab. 1. Fore wing with the reniform defined by diffused fuscous, the postmedial line with fuscous band beyond it from costa to discal fold, then a series of spots.

Ab. 2. *validula*. Wings pale ochreous brown.

Ab. 3. Fore wing suffused with fuscous black from beyond the antemedial to beyond the postmedial line.

Ab. 4. *antica*. Fore wing with the medial area suffused with white except the costal area and a patch in end of cell.

Hab. Formosa, 1 ♀; Punjab, Wuzeerabad (*Hearsey*), 1 ♀ type *validula*, Almorah (*Boys*), 1 ♀ type *infligens*; Assam, Silhet; Bombay, Mhow (*Forsayeth*), 1 ♀, Kanara (*Ward*), 1 ♀; Madras, Nilgiris (*Lindsay*, *Hampson*), 2 ♂, 5 ♀, Coimbatore (*Walhouse*), 1 ♂ type *antica*; Ceylon, Pundaloya (*Green*), 1 ♂; Burma, Moulmein (*Clerk*), 1 ♀ type *solita*; Java (*Horsfield*), 2 ♀ type *ligilla*. *Exp.* 34–42 millim.

Larva. Forsayeth, Trans. Ent. Soc. 1884, p. 411, pl. 14. ff. 9, 9 *a*.

Pale green with a broad yellow lateral stripe; the two anterior pairs of prolegs wanting. Food-plant, a leguminous tree.

Pupa in a leafy cell spun together by a loose silky web to which it is attached by the anal spines.

c^1. Underside of wings of male with more or less down-turned woolly hair on basal half.
  a^2. Hind wing with indistinct double lines on medial area.
    a^3. Hind wing with double dentate subterminal line. *atrifusa*.
    b^3. Hind wing with treble sinuous subterminal line.
      a^4. Fore wing with the postmedial line angled inwards at discal fold and oblique below vein 4. *mendax*.
      b^4. Fore wing with the postmedial line incurved at discal fold and below vein 4 ..... *detersa*.
  b^2. Hind wing without double lines on medial area..... *metaleuca*.

8114. Pericyma atrifusa. (Plate CCXXXII. fig. 9.)

Homoptera atrifusa, Hmpsn. Ann. S. Afr. Mus. ii. p. 324 (1902).

Head and thorax black-brown mixed with some grey; palpi white in front; pectus white tinged with rufous in front; legs white irrorated with blackish, the tarsi black ringed with white; abdomen grey tinged with red-brown, the crests blackish, the ventral surface white. Fore wing grey suffused and irrorated with fuscous; subbasal line double, black filled in with grey, sinuous, from costa to vein 1; antemedial line double, the inner line indistinct, the outer black, slightly curved and somewhat incurved at vein 1; the medial area with four indistinct double waved lines, the fourth excurved beyond the cell; reniform defined by black and with some white points on its outer edge; postmedial line double, the inner line black, the outer indistinct, oblique and sinuous to vein 6, incurved at discal fold, angled outwards at vein 4, then incurved and slightly sinuous, some minute white points beyond it on costa; subterminal line whitish defined on each side by blackish, dentate, incurved at discal fold and below vein 4; a crenulate black line before termen with blackish patches before it at apex and middle and a fine white line at base of cilia. Hind wing whitish tinged with brown and slightly irrorated with blackish; the medial area with traces of three double slightly sinuous lines from discal fold to vein 1; a black postmedial line from vein 6 to inner margin, followed by a double dentate subterminal line connected by streaks with a sinuous black line before termen; a fine white line at base of cilia; the underside white, the costal and terminal areas slightly irrorated with brown, a small black discoidal spot, and series of minute black lunules before termen.

Ab. 1. Fore wing red-brown from the antemedial to beyond the postmedial line, the terminal area white with brown patches at apex and middle of termen; hind wing tinged with red-brown, the terminal area white.

Hab. Bechuanaland, Lake N'Gami (*Lugard*), 1 ♀ type; Transvaal, White R. (*Cooke*), 1 ♂, Rietfontein (*Janse*), 1 ♂. *Exp.* 32–40 millim.

8115. Pericyma mendax.

Alamis mendax, Wlk. xiii. 1047 (1857).
Dugaria cilipes, Wlk. xiii. 1076 (1857).
Homoptera delineosa, Wlk. xv. 1798 (1858).
Homoptera disjuncta, Wlk. xxxiii. 885 (1865).

Head and thorax red-brown mixed with ochreous and some dark scales, the tegulæ with two black lines; pectus and legs white tinged with rufous, the tarsi black ringed with white; abdomen rufous with the crests darker, the ventral surface white. Fore wing rufous suffused with red-brown, the base and terminal area

paler; a slight sinuous brown subbasal line from costa to submedian fold; antemedial line indistinctly double, sinuous, inwardly oblique below the submedian fold; the medial area with three slight double sinuous brown lines, oblique below the cell and vein 4; a minute dark point in middle of cell; reniform obscurely defined by fuscous and with curved fuscous striga in centre; postmedial line black, arising below costa, sinuous, incurved at discal fold and oblique below vein 4, an obscure dark line beyond it forming a patch on costal area with pale points on costa and its outer edge angled outwards at vein 7 and followed below vein 6 by a series of dark spots; subterminal line faintly defined on outer side by red-brown, sinuous, incurved at discal fold, angled outwards below vein 4, then oblique; a fine crenulate black line before termen and fine pale line at base of cilia. Hind wing red-brown with some

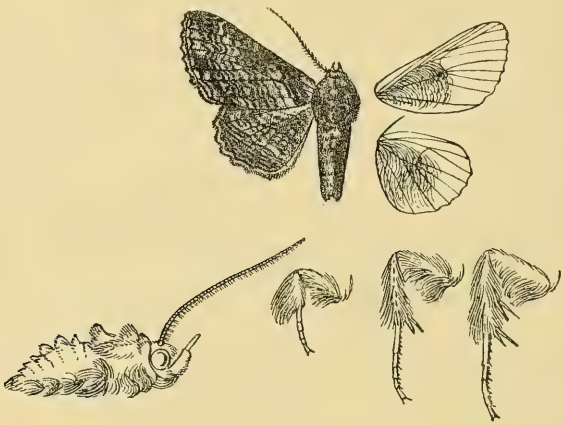


Fig. 77.—*Pericyma mendax*, ♂. ½.

blackish irroration except on terminal area; traces of a double sinuous antemedial line and of two similar lines beyond the cell; a double slightly sinuous black subterminal line, the outer line arising at vein 6 and followed by an indistinct brown line; a fine slightly sinuous black line before termen and whitish line at base of cilia; the underside white irrorated with brown except on basal and inner areas, traces of three sinuous lines beyond the cell, an indistinct double minutely waved subterminal line followed by a series of dark points, and a series of black points before termen.

Ab. 1. *delineosa*. Fore wing with the medial area variegated with fuscous black.

Ab. 2. Fore wing suffused with fuscous black from beyond the antemedial to beyond the postmedial line.

Ab. 3. *disjuncta*. Fore wing with the medial area variegated with white except the costal area and a patch at end of cell.

Ab 4. Similar, but fore wing with the medial area suffused with violaceous white.

Hab. Gold Coast, Kumasi (*Whiteside*), 1 ♀; S. Nigeria, Lagos, Ibadau (*Dudgeon*), 1 ♀, Old Calabar (*Crompton*), 1 ♂, Olokemeji (*Dudgeon*), 1 ♀; Congo (*Curror*), 1 ♀ type *cilipes*; Sudan, White Nile (*Dunn*), 1 ♂, Blue Nile (*Flower*), 1 ♀; Br. E. Africa, Athi-ya-Mawe (*Betton*), 1 ♀; Natal, Durban (*Plant*, *Gueinzius*, *Burrows*, *Bowker*, *Rose*, *Leigh*), 1 ♂, 6 ♀, type and types *disjuncta* and *delineosa*. *Exp.* 34–44 millim.

Larva. Pale yellow; the dorsal area with three slight white lines interrupted by pale red bars at end of somites 4, 5, 6; subdorsal stripe white partly defined by red below and interrupted at the incisures, some white and red streaks below it on thoracic somites and small white spots on somites 8, 9, 10, 11; lateral white streaks defined by black above and red below on thoracic somites, then a sinuous white stripe to somite 8, oblique stripes on somites 9, 10 and streaks on terminal somites similarly defined by black and red; sublateral and interrupted ventral red streaks; claspers pale red; head pale red with pale yellow lines above the eyes and oblique lines across and below them.

8116. **Pericyma detersa.** (Plate CCXXXII. fig. 10.)

Homoptera detersa, Wlk. xxxiii. 888 (1865); Hmpsn. Moths Ind. ii. p. 474.
Alamis yendola, Swinh. Trans. Ent. Soc. 1891, p. 150.

Head and thorax dark brown mixed with grey; pectus and legs whitish tinged with brown, the fringe of hair on fore tibiæ of male darker, the tarsi blackish ringed with white; abdomen brown mixed with grey, the crests darker, the ventral surface whitish irrorated with brown. Fore wing grey suffused with red-brown and in parts with fuscous brown; the basal area suffused with brown, with indistinct sinuous grey lines and two slight subbasal dark striæ from costa; antemedial line dark, inwardly oblique, sinuous, a pale band beyond it, then the rest of medial area dark; the medial area with two indistinct double waved dark lines, oblique below the cell; a minute brown spot in middle of cell; reniform very faintly defined by blackish; postmedial line double, black, filled in with greyish and defined on each side slightly by greyish, waved, excurved to vein 4, then oblique, a dark patch beyond it on costal area with some white points on costa; subterminal line indistinct, pale, incurved at discal fold and below vein 3; a fine waved black line before termen and a fine whitish line at base of cilia. Hind wing greyish suffused with red-brown and slightly irrorated with black except on terminal area; traces of a double sinuous dark antemedial waved line and of two similar lines beyond the cell; a treble sinuous blackish subterminal line from vein 6 to inner margin; a fine waved black line before termen and fine whitish line at base of cilia; the underside whitish tinged and irrorated

with brown, a blackish discoidal point, an indistinct curved slightly waved antemedial line, three lines beyond the cell, double subterminal line, and series of black points before termen.

Hab. Punjab, Almorah (*Boys*), 1 ♂ type; Sind, Karáchi (*Swinhoe*), 1 ♀ type *yendola*. *Exp.* 30 millim.

8117. **Pericyma metaleuca**, n. sp. (Plate CCXXXII. fig. 11.)

♂. Head and thorax whitish suffused with brown, a blackish bar between antennæ, the tegulæ with strong black line near tips, the metathoracic crest dark; palpi white with blackish spot at side of 2nd joint; tarsi black ringed with white; abdomen white tinged with brown and with black segmental lines on terminal segments, the ventral surface white. Fore wing whitish tinged with pale red-brown; subbasal line double, blackish, from costa to vein 1; antemedial line double filled in with red-brown, the outer line strong, black, and slightly sinuous; the medial area with four indistinct sinuous brown lines, the fourth excurved beyond the cell; a minute black point in middle of cell; reniform incompletely defined by black, small; postmedial line black, oblique to vein 6, angled inwards at discal fold and outwards at veins 4, 3, then incurved and sinuous, a faint red-brown line beyond it; a blackish patch on costal area with some whitish on it before the whitish subterminal line faintly defined on each side by red-brown, incurved at discal fold, excurved at middle, then somewhat dentate and with blackish mark at inner margin; a fine crenulate black line before termen, and fine white line at base of cilia. Hind wing white, the termen faintly tinged with red-brown at middle; a slight somewhat waved treble blackish subterminal line from vein 4 to tornus, interrupted at submedian fold; a sinuous black line before termen, obsolescent towards apex; cilia brown at tips at middle; the underside white, the costal area irrorated with a few black scales, a series of black points before termen.

Hab. Br. E. Africa, Taveta (*Rogers*), 1 ♂ type. *Exp.* 24 millim.

b. (*Pericyma.*) Legs of male moderately fringed with hair; pectus and ventral surface of abdomen not clothed with long hair; underside of wings without silky androconia or downturned hair.
- *a*[1]. Fore wing with the postmedial line dentate at veins 4, 3 and bent inwards to below end of cell... *squalens.*
- *b*[1]. Fore wing with the postmedial line incurved and sinuous below vein 4 ..... *albidentaria.*
- *c*[1]. Fore wing with the postmedial line incurved and waved below vein 4 ..... *scandulata.*

8118. **Pericyma squalens.** (Plate CCXXXII. fig. 12.)

Pericyma squalens, Led. Verh. zool.-bot. Ges. Wien, v. pl. v. f. 12 (1855); Staud. Cat. Lep. pal. p. 241.

♀. Head, thorax, and abdomen white tinged with brown, the last with the dorsal crests blackish; pectus, legs, and ventral

surface of abdomen brownish white, the tarsi black ringed with white. Fore wing white tinged with brown and slightly irrorated with blackish; subbasal line fine, black, excurved below costa, then oblique and ending at vein 1; a brown shade before the antemedial line, which is black, excurved, and waved; the medial area with three indistinct double waved brown lines, the third excurved beyond the cell; a whitish discoidal patch; postmedial line strong, black, angled outwards below costa, then sinuous, acutely angled outwards at veins 4, 3, then bent inwards to below end of cell, and erect and sinuous to inner margin, followed by a brown shade before the diffused whitish subterminal line which is excurved below vein 7 and angled outwards below vein 4; some brown suffusion at apex and a waved black line before termen; cilia with a waved brown line through them. Hind wing whitish suffused with brown and slightly irrorated with fuscous; the medial area with traces of four double slightly waved lines; postmedial line black, slightly waved, obsolescent towards costa, followed by a brown shade before the slightly sinuous diffused whitish subterminal line; a waved black line before termen, and fine white line at base of cilia; the underside white slightly irrorated with brown, a blackish discoidal point, traces of three minutely waved lines on medial area, curved minutely waved postmedial line, slight subterminal shade, and series of black points before termen.

Hab. Armenia; Cyprus, Larnaka (*B. Fletcher*), 1 ♀; Syria, Mardin; Palestine. *Exp.* 36 millim.

8119. **Pericyma albidentaria.**

Acidalia albidentaria, Frr. Neue Beitr. Schmett. iv. p. 115, pl. 354. f. 1 (1841); Staud. Cat. Lep. pal. p. 241.
Pericyma albidens, Herr.-Schäff. Eur. Schmett., Noct. f. 295 (1845); Mill. Icones, ii. p. 468, pl. 98. ff. 9, 10.

Head and thorax red-brown mixed with whitish; abdomen whitish mixed with brown, the crests blackish. Fore wing grey suffused with pale red-brown; subbasal line black, sinuous, from costa to vein 1; antemedial line black, inwardly oblique, waved; the medial area with four indistinct double inwardly oblique sinuous brown lines; a white discoidal bar with curved brown striga on it; postmedial line black, slightly excurved below costa and incurved at discal fold, angled outwards at vein 4, then incurved and slightly sinuous; a fuscous shade with a fine whitish line on it before the faint pale subterminal line slightly defined on outer side by brown, excurved below vein 7 and at middle, then incurved; a sinuous black line before termen and fine white line at base of cilia. Hind wing grey suffused with pale red-brown and slightly irrorated with blackish; the medial area with traces of five waved lines from discal fold to inner margin; a sinuous blackish postmedial line from vein 6 to inner margin; a slightly sinuous whitish subterminal line faintly defined on each side by brown; a waved black line before termen and fine white line at base of cilia; the underside white irrorated with pale brown, the medial area with three minutely

waved brown lines, a curved minutely waved postmedial line, subterminal series of brownish spots on the veins, and a series of black points before termen.

Ab. 1. Paler; wings with the lines less distinct.

Fig. 78.—*Pericyma albidentaria*, ♂. ½.

Hab. Egypt; S. Russia, Sarepta (*Christoph*), Zeller, Frey, Leech, and Crowley Colls.; Armenia, Caucasus; Cyprus, Larnaka (*B. Fletcher*), 1 ♂; Syria, Mardin; W. Turkestan, Turcomania, 1 ♂, 1 ♀, Ferghana, Issyk-Kul; E. Turkestan, Kashgar, Ili. *Exp.* 28–34 millim.

Larva. Kirby, Butt. & Moths Eur. p. 279, pl. 53. f. 4; Hffm. Raup. p. 145.

Long and slender; greenish yellow; 1st pair of prolegs rudimentary. Food-plant, *Alhagi camellorum*.

8120. **Pericyma scandulata.** (Plate CCXXXII. fig. 13.)

Homoptera scandulata, Feld. Reis. Nov. pl. 111. f. 22 (1874).
Polydesma exarata, Mab. Ann. Soc. Ent. Fr. 1890, p. 42.

Head and thorax reddish brown mixed with fuscous and some grey; pectus and legs whitish tinged with brown, the tarsi black ringed with white; abdomen reddish brown, the crests darker, the ventral surface white. Fore wing reddish brown suffused and irrorated with fuscous and some grey; a faint sinuous subbasal line from costa to submedian fold; antemedial line indistinct, double, minutely waved; medial area with two indistinct double waved dark lines, the outer excurved beyond the cell; a minute dark spot in middle of cell; reniform with its centre and outer edge indistinctly defined by brown; postmedial line double, blackish, waved, incurved below vein 4, some white points beyond it on costa; subterminal line double, dark filled in by reddish, excurved below vein 7 and at middle and incurved at discal and submedian folds; a waved

black line before termen. Hind wing grey suffused with reddish brown and irrorated with blackish; a faint brown discoidal bar; a double minutely waved blackish postmedial line obsolescent on costal area; an indistinct waved reddish subterminal line defined on each side by blackish points; a crenulate black line before termen; the underside white irrorated with brown except on inner area, a black discoidal point and faint curved brown postmedial line.

Ab. 1. Fuscous and grey with hardly any brown tinge.—Uganda; Rhodesia.

Hab. Fr. Guinea, Assinie, type † ♂ *exarata* in Coll. Mabille; Uganda, Ruwenzori (*Wollaston*), 1 ♀; Rhodesia, Bulawayo (*Marshall*), 1 ♂; Transvaal, Pretoria (*Breyer*), 1 ♀; Natal, Estcourt (*Hutchinson*), 3 ♂, Durban, 1 ♂. *Exp.* 36–42 millim.

Sect. III. Antennæ of male simple and somewhat laminate; tibiæ tufted with long hair; wings on underside slightly clothed with downturned hair on basal half.

8121. **Pericyma polygramma**, n. sp.

♂. Head and thorax reddish brown mixed with black-brown and some grey; antennæ blackish; pectus pale red-brown; tarsi black ringed with white; abdomen dark brown, the crests blackish, the

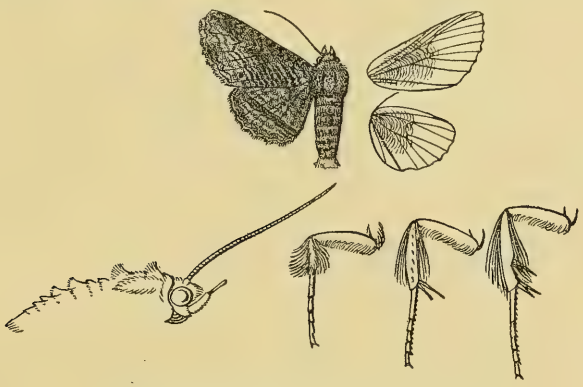


Fig. 79.—*Pericyma polygramma*, ♂. ½.

two terminal segments with grey bands. Fore wing reddish brown, the basal area tinged with fuscous to the postmedial line at costa and middle of inner margin; an indistinct sinuous subbasal line from costa to submedian fold; antemedial line indistinct, double, angled inwards in cell and oblique below the cell; the medial area with four indistinct double dark lines, sinuous to median nervure and vein 4, then oblique; a black point in middle of cell; reniform with indistinct whitish annulus defined by blackish; postmedial

line double, the inner line black, the outer indistinct, arising below costa and slightly sinuous, angled inwards at discal fold and oblique below vein 4, some fuscous beyond it on costal area and two small spots above inner margin; subterminal line indistinct, double, sinuous, oblique below vein 4; a fine waved black line before termen and fine white line at base of cilia. Hind wing reddish brown slightly irrorated with black except on terminal area; an indistinct double slightly sinuous antemedial line and three similar lines beyond the cell; an oblique slightly sinuous treble black subterminal line with a red-brown line beyond it; a fine sinuous black line before termen and white line followed by blackish at base of cilia; the underside whitish irrorated with brown, a black discoidal point, indistinct slightly sinuous antemedial line and three lines beyond the cell, a minutely waved subterminal line and series of black points before termen.

Ab. 1. Pale ochreous brown.—N. Nigeria.

Hab. N. Nigeria, Zungeru (*Macfie*), 1 ♂; Transvaal, White R. (*Cooke*), 1 ♂ type. *Exp.* 32–38 millim.

Genus **CORTYTA**.

	Type.
Cortyta, Wlk. xiii. 1076 (1857)	*canescens*.

Proboscis fully developed; palpi with the 2nd joint upturned, reaching to about vertex of head and moderately scaled, the 3rd porrect, moderate; frons smooth, with tuft of hair above; eyes large, round; antennæ of male typically ciliated; thorax clothed almost entirely with scales, the metathorax with depressed crest; fore tibiæ moderately fringed with hair, the mid tibiæ of male typically dilated with a groove containing a fringe of scales, the fore and hind tibiæ not spined; abdomen smoothly scaled and without crests. Fore wing with the apex rounded, the termen evenly curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male with serrations ending in bristles; mid tibiæ without groove and fringe of scales.

8122. **Cortyta remigiana**, n. sp.

♂. Head, thorax, and abdomen pale ochreous tinged with red-brown; antennæ red-brown; palpi red-brown at sides except at tips; fore and mid legs and the hind tarsi suffused with brown. Fore wing pale ochreous suffused with red-brown and slightly irrorated with dark brown, the terminal area somewhat paler; a faint brown subbasal line from costa to submedian fold; antemedial line slight, brown with small brown spot at costa, then excurved and waved to just above inner margin, then bent upwards to just above vein 1 and down to inner margin at the postmedial line, its sinus below the cell filled in with deep chocolate-brown; an oblique brown bar from middle of costa followed by a dark spot; reniform faintly defined by brown except above, expanding below,

some chocolate-brown beyond it; postmedial line slight, red-brown defined on outer side by ochreous, minutely waved, oblique to below vein 7, somewhat inwardly oblique to submedian fold, then retracted to lower edge of reniform and again excurved to inner margin, followed by slight blackish marks on veins 6 to 3; some ochreous

Fig. 80.—*Cortyta remigiana*, ♂. ½.

points on postmedial part of costa; subterminal line indistinct, pale, dentate, faintly defined on each side by red-brown; a fine waved red-brown terminal line; cilia ochreous at base, red-brown at tips. Hind wing pale ochreous tinged with red-brown especially on terminal area; a faint sinuous brown line from lower angle of cell to inner margin; the underside creamy white.

Hab. Br. E. Africa, Taveta (*Rogers*), 1 ♂ type. *Exp.* 34 millim.

Sect. II. Antennæ of male ciliated.

A. Mid tibiæ of male dilated with a groove containing a fringe of large scales.
  a. Fore wing with the antemedial line excurved in submedian interspace.
    a^1. Fore wing with oblique dark shade from apex ..... *diapera.*
    b^1. Fore wing without oblique dark shade from apex.
      a^2. Hind wing fulvous yellow ..... *metaxantha.*
      b^2. Hind wing ochreous white.
        a^3. Fore wing with the outer half of medial area not suffused with grey-brown ..... *leucoptera.*
        b^3. Fore wing with the outer half of medial area suffused with grey brown.
          a^4. Fore wing with the ante- and postmedial lines widely separated, the latter not angled outwards at vein 2 ..... *dispar.*
          b^4. Fore wing with the ante- and postmedial lines closer together, the latter slightly angled outwards at vein 2 ..... *fasciolata.*
  b. Fore wing with the antemedial line not excurved in submedian interspace.
    a^1. Fore wing with the medial area suffused with red-brown.
      a^2. Fore wing with three double lines on medial area. *balnearia.*
      b^2. Fore wing with one double line on medial area ... *impar.*
    b^1. Fore wing with the medial area not suffused with red-brown.
      a^2. Fore wing with the postmedial line bent outwards below costa.

a^3. Fore wing with the postmedial line bent inwards below vein 3 to below end of cell ..... *eremochrea.*
b^3. Fore wing with the postmedial line strongly incurved and somewhat dentate below vein 4.
a^4. Hind wing with double medial line.
a^5. Wings with the ground-colour whitish..... *vetusta.*
b^5. Wings with the ground-colour rufous ..... *rosacea.*
b^4. Hind wing without double medial line ..... *polycyma.*
c^3. Fore wing with the postmedial line very slightly incurved and not dentate below vein 4 ..... *phæocyma.*
b^2. Fore wing with the postmedial line arising from the costa towards apex, oblique, excurved at middle ..... *canescens.*

8123. **Cortyta diapera**, n. sp. (Plate CCXXXII. fig. 14.)

♂. Head and thorax white slightly mixed with brown; palpi white, the extremity of 2nd joint and the 3rd joint black; frons at sides and antennæ black; tibiæ suffused with brown, the tarsi brown with whitish rings; abdomen ochreous white, the base of ventral surface whiter. Fore wing white slightly irrorated with brown; a curved subbasal brown striga from costa; antemedial line slight, brown, oblique to submedian fold where it is produced to a minute black streak, then inwardly oblique; a very indistinct double waved brownish medial line; reniform defined at sides by brown striæ; postmedial line indistinctly double, the inner line blackish, oblique to vein 6, incurved at discal fold, excurved at vein 4, then incurved, and again slightly excurved above inner margin, met at vein 6 by an oblique rather diffused black fascia from apex, its outer edge then defined by a blackish shade, some slight blackish marks beyond it on costa and slight blackish streaks on the veins; an indistinct oblique brownish subterminal line, slightly incurved at submedian fold; a slight waved blackish line just before termen. Hind wing white tinged with ochreous brown, the termen ochreous brown except towards tornus; a terminal series of blackish points from apex to vein 2; cilia white faintly chequered with brown to vein 2; the underside white, the costal area slightly irrorated with brown.

Hab. Transvaal, Waterberg (*Wilde, Zutrencka*), 2 ♂ type. *Exp.* 32 millim.

8124. **Cortyta metaxantha.** (Plate CCXXXII. fig. 15.)

Chalciope metaxantha, Hmpsn. Ann. S. Afr. Mus. ii. p. 334 (1902).

♂. Head and thorax ochreous tinged with reddish and mixed with dark brown; tarsi blackish ringed with whitish; abdomen ochreous tinged with fulvous, the ventral surface ochreous white. Fore wing greyish ochreous tinged with brown, the basal area thickly irrorated with blackish; subbasal line black, sinuous, from costa to submedian fold; antemedial line strong, black, excurved and waved, a faint diffused line before it; traces of a double medial line excurved from below costa to median nervure, then oblique, a

brown shade beyond it, constricted at middle; postmedial line strong, black, sinuous, strongly incurved below vein 4, a rather diffused brown line beyond it followed by a pale grey band; traces of a waved dark subterminal line; a highly waved dark terminal line; cilia with a fine pale line at base. Hing wing fulvous yellow, the inner area irrorated with a few black scales, the termen tinged with brown from apex to vein 2; postmedial line black, from vein 3 to inner margin; a waved black terminal line. Underside of both wings fulvous yellow, the apical areas with patches of brown suffusion.

Hab. Damaraland; Cape Colony, 1 ♂ type. *Exp.* 38 millim.

8125. **Cortyta leucoptera.** (Plate CCXXXII. fig. 16.)

Hypætra leucoptera, Hmpsn. P. Z. S. 1896, p. 264, pl. x. f. 1.

♂. Head and thorax ochreous white with a slight reddish tinge; antennæ ringed with blackish; palpi white, blackish at tips; pectus white; tarsi blackish ringed with white; abdomen ochreous white. Fore wing ochreous white, the terminal area grey-white; a slight black subbasal line excurved below costa, then oblique to vein 1 where it terminates; some grey suffusion before the strong black antemedial line, which is oblique to submedian fold, then erect and slightly sinuous; medial area faintly tinged with red-brown; an indistinct double waved brownish medial line; reniform defined by blackish, small and elliptical; some grey suffusion on costal area before the black postmedial line, which is slightly excurved below costa and at middle and incurved at discal fold, strongly incurved and slightly sinuous below vein 4, a grey-brown shade and faint dark line beyond it; some pale points on costa towards apex; traces of a pale waved subterminal line, the area beyond it greyer with a blackish patch at apex; a slight crenulate blackish line just before termen which is ochreous. Hind wing ochreous white, the terminal half with dark striæ on veins 2 and 1; a fine waved blackish line just before termen with some brown suffusion before it except towards tornus; cilia with a dark line through them. Underside of both wings creamy white; fore wing with fuscous terminal patch from apex to vein 3.

Hab. W. Algeria; Somaliland, Beichen (*Gillett*), 1 ♂; Aden (*Nurse, Meade-Waldo*), 2 ♂ type. *Exp.* 30 millim.

8126. **Cortyta dispar.** (Plate CCXXXII. fig. 17 ♂, 18 ♀.)

Pericyma dispar, Püng. Iris, xvi. p. 290, pl. vi. ff. 7, 7 *a* (1903).

♂. Head and thorax ochreous white, the latter tinged with brown on vertex; antennæ ringed with black; palpi white, the 3rd joint blackish; tarsi black, ringed with white; abdomen ochreous white dorsally slightly tinged with brown. Fore wing creamy ochreous, the terminal area grey suffused with fuscous brown; subbasal line represented by a curved black striga from

costa and striga at vein 1; some brown suffusion before the dark brown antemedial line, which is slightly angled outwards below costa and at submedian fold and incurved at vein 1; the outer half of medial area suffused with brown; an indistinct double waved brownish medial line; reniform indistinctly defined by dark brown, elliptical, a faint oblique sinuous line from it to inner margin; postmedial line dark brown, slightly excurved below costa and at middle and incurved at discal fold, strongly incurved and slightly sinuous below vein 4, a dark line beyond it incurved below vein 4; some pale points on postmedial part of costa; subterminal line whitish, waved, excurved at middle, the area beyond it rather darker; a fine crenulate black line just before termen with small whitish spots beyond it in the interspaces; a fine whitish line at base of cilia. Hind wing ochreous white, the terminal half with diffused brown striæ between veins 4 and 2 and on vein 1; a crenulate dark line just before termen with some brown suffusion before it. Underside of both wings creamy white; fore wing with fuscous terminal patch from apex to vein 3.

♀. Head, thorax, and abdomen pale grey tinged with brick-red; fore wing with the ground-colour pale grey tinged with brick-red; hind wing tinged with red-brown.

Ab. 1. Fore wing more uniform pale reddish brown; hind wing tinged with red-brown.

Ab. 2. Fore wing with the ante- and postmedial areas suffused with fuscous.

Hab. PALESTINE, Engeddi, 1 ♀; E. TURKESTAN, Altyn Tag, 1 ♂. *Exp.* 30 millim.

8127. **Cortyta fasciolata.** (Plate CCXXXII. fig. 19.)

Pericyma fasciolata, Warr. Nov. Zool. xii. p. 24, pl. iv. ff. 11, 21 (1905).

♂. Head and thorax ochreous white pencilled with red-brown; pectus and legs whitish, the tarsi brown ringed with white; abdomen ochreous white tinged with red-brown. Fore wing ochreous white tinged with rufous, the basal area, outer half of medial area and the area just beyond the postmedial line suffused with brown; subbasal line blackish, sinuous, from costa to vein 1; antemedial line double, blackish, the inner line indistinct, slightly angled outwards below costa, excurved below the cell and angled inwards at vein 1; the medial area with two indistinct double sinuous lines; reniform defined by black, small; postmedial line black, excurved below costa, slightly incurved at discal fold, excurved beyond lower angle of cell, bent inwards below vein 3, slightly angled outwards at vein 2 and excurved below submedian fold; subterminal line indistinct, whitish slightly defined on outer side by brown, minutely waved, excurved below vein 7 and at middle; a fine waved blackish line just before termen and a fine white line at base of cilia. Hind wing ochreous white tinged with rufous; traces of double slightly waved medial and postmedial lines with

double black striæ at inner margin and of a slightly waved subterminal line; a fine waved blackish line just before termen; cilia with a brown line near base; the underside ochreous whitish slightly irrorated with brown.

♀. Fore wing much more evenly and strongly suffused with red-brown.

Hab. Algeria, C. Sahara, S. Oued Mya, Ain, Guettara (*Hartert*); Sudan, R. Atbara, Nakheila (*N. C. Rothschild*), 2 ♀ and type † ♂, ♀ in Coll. Rothschild. *Exp.* 22–28 millim.

8128. **Cortyta balnearia.** (Plate CCXXXII. fig. 20.)

Polydesma balnearia, Dist. A. M. N. H. (7) i. p. 228 (1898).

♂. Head and thorax grey mixed with dark brown; antennæ black; palpi ochreous white, black towards tips; pectus whitish; fore and mid tibiæ with some black; tarsi black ringed with white; abdomen grey, dorsally suffused with brown. Fore wing with the basal area grey suffused with blackish especially towards the antemedial line; a waved black subbasal line from costa to submedian fold; antemedial line strong, black defined on outer side by ochreous, waved, slightly excurved; medial area bright red-brown with three indistinct double brown lines, waved towards costa; reniform defined by blackish, small and narrow; postmedial line black, excurved below costa and at middle, incurved at discal fold and below vein 4, slightly angled outwards at vein 1, defined on outer side by a narrow fuscous brown band with slightly dentate outer edge; terminal area pale grey; traces of a pale waved subterminal line defined on inner side by fuscous and on outer side by rufous towards costa; a fine dentate black line just before termen. Hind wing whitish tinged with reddish brown; some faint dark striæ on veins 2 and 1 towards termen; a fine dentate black line just before termen slightly defined on inner side by fuscous suffusion except towards tornus. Underside of both wings brownish white with fuscous brown terminal band except towards tornus.

Hab. Mashonaland, Umtali (*Marshall*), 1 ♂; Transvaal, Waterberg (*Distant*), 1 ♂ type. *Exp.* 36 millim.

8129. **Cortyta impar**, n. sp. (Plate CCXXXII. fig. 21.)

♂. Head, thorax, and abdomen ochreous slightly tinged with brown; palpi white, brown towards tips; fore and mid tarsi blackish ringed with white. Fore wing ochreous, the basal area and outer half of medial area suffused with red-brown, the terminal area with a greyish tinge; a blackish point at base and obliquely placed subbasal blackish points on costa and median nervure; antemedial line double, the inner line indistinct, the outer black, slightly angled outwards below costa and inwards at vein 1; medial line double, indistinct, brownish, excurved in cell; reniform indistinctly defined by brown, small and narrow, a blackish striga above it from

costa and line from it to inner margin angled outwards at vein 1; postmedial line double, the inner line blackish, the outer less distinct, bent outwards below costa, incurved at discal fold and below vein 4; a very indistinct pale subterminal line excurved below vein 7 and at middle and incurved at discal and submedian folds; a terminal series of black points. Hind wing ochreous white slightly tinged with reddish brown; some dark striæ on medial parts of veins 2 and 1; a terminal series of slight black lunules. Underside ochreous white, the apex of fore wing tinged with brown.

Hab. Punjab, Jubbulpur, 1 ♂ type. *Exp.* 24 millim.

8130. **Cortyta eremochroa.** (Plate CCXXXII. fig. 22.)

Homoptera eremochroa, Hmpsn. J. Bomb. Nat. Hist. Soc. xxi. p. 1222 (1912).

♀. Head, thorax, and abdomen grey-white mixed with brown; pectus, legs, and ventral surface of abdomen white, the fore and mid tibiæ irrorated with brown, the tarsi black ringed with white. Fore wing grey tinged with red-brown and irrorated with fuscous; the costa with series of small blackish spots; a slight curved blackish subbasal line from costa to submedian fold; antemedial line blackish, curved and slightly waved; reniform defined by black, very small; postmedial line blackish, slightly bent outwards below costa, incurved at discal fold, bent inwards below vein 4 to below end of cell and sinuous to inner margin, some white points alternating with the black spots beyond it on costa; a faint pale subterminal line angled outwards at vein 7 and excurved at middle; a slight waved black line with points at the interspaces before termen. Hind wing grey tinged with red-brown and irrorated with blackish; traces of double minutely waved medial, postmedial, and subterminal blackish lines except en costal area; a waved black line before termen; cilia whitish with two brown lines through them; the underside whitish tinged and irrorated with brown, a black discoidal point.

Hab. Bombay, Deesa (*Nurse*), 1 ♀ type. *Exp.* 26 millim.

8131. **Cortyta vetusta.**

Polydesma vetusta, Wlk. xxxiii. 875 (1865); Hmpsn. Moths Ind. ii. p. 467.
Pericyma acrosticta, Püng. Iris, xvi. p. 290, pl. vi. f. 6 (1903).

Head and thorax brown mixed with blackish and white; pectus and legs white tinged with brown, the fore tibiæ and the fore and mid tarsi black ringed with white; abdomen ochreous brown mixed with white, the ventral surface white. Fore wing white tinged with ochreous brown and thickly irrorated with fuscous; subbasal line black defined on outer side by white, waved, from costa to submedian fold, with blackish spots beyond it at costa, below the cell, and above vein 1; antemedial line double, blackish, waved, and

rather diffused; a double rather diffused waved blackish medial line, with a black discoidal striga on its outer edge; postmedial line black, bent outwards below costa, then sinuous, below vein 3 obliquely bent inwards to submedian fold where it forms a spot, then erect to inner margin, a diffused sinuous dark line beyond it and some white points on costa; a double waved fuscous subterminal line excurved below vein 7 and at middle, some blackish beyond it at apex; a fine waved black line before termen with black points at the interspaces followed by whitish points; cilia with a

Fig. 81.—*Cortyta vetusta*, ♂. ½.

fine white line at base. Hind wing grey tinged with brown and irrorated with blackish; a double rather diffused oblique blackish line from discal fold to inner margin; a rather diffused double slightly waved postmedial blackish line, obsolescent towards costa; an indistinctly double waved dark subterminal line; a fine waved black line before termen with black points at the interspaces; cilia with a fine white line at base; the underside white irrorated with brown except on inner area, two dark discoidal striæ, an indistinct curved postmedial line, double subterminal line, and series of black points before termen.

Ab. 1. Paler.

Ab. 2. *acrosticta*. Fore wing with distinct black spot at apex.

Hab. Palestine, Engeddi, Ain-Dchidi; Sudan, White Nile, Gabt el Meghahid (*Dunn*), 1 ♀, Blue Nile (*Flower*), 1 ♂, Port Sudan (*Mrs. Waterfield*), 2 ♂, 1 ♀; Somaliland, Bulhar (*Drake-Brockman*), 1 ♂; Bechuanaland, Lake N'Gami (*Lugard*), 1 ♀; Punjab, 1 ♂ type, Manpuri, 1 ♂; Biluchistan, Ormara (*Cumming*), 1 ♂; Sind, Karáchi (*Swinhoe*), 3 ♂; Bombay, 1 ♂; Madras, Gooty (*Campbell*), 1 ♂. *Exp.* 34–40 millim.

8132. Cortyta rosacea. (Plate CCXXXII. fig. 23.)

Pericyma rosacea, Rebel, Denks. Math.-Nat. Akad. Wissensch. lxxi. p. 60 (1907).

♂. Head, thorax, and abdomen rufous mixed with some grey and dark brown; antennæ blackish; tarsi blackish with pale rings; abdomen ochreous white below. Fore wing rufous irrorated with greyish and dark brown; subbasal and antemedial lines indistinct, double, waved, with blackish spots at costa, the former from costa to vein 1, the latter erect; orbicular a blackish point, the reniform a small elliptical blackish spot with pale mark beyond it; medial line double, waved, erect; postmedial line double, minutely waved, incurved below vein 4; subterminal line indistinct, reddish, minutely waved, somewhat excurved below vein 7 and at middle; a blackish patch at apex; a terminal series of minute black points; cilia pale rufous and grey-brown, with pale waved lines at base and middle. Hind wing pale rufous irrorated with grey and fuscous; double minutely waved medial and postmedial lines; the terminal area thickly irrorated with fuscous; a terminal series of black points; cilia pale rufous at base, whitish at tips, with a waved brown line at middle; the underside yellowish white, the terminal area suffused with fuscous from apex to submedian fold.

Ab. 1. Fore wing with distinct black spot at apex.

Hab. Sudan, Port Sudan (*Mrs. Waterfield*), 1 ♂, 1 ♀; Sokotra, Makálla, type † ♂ in Mus. Vienna. *Exp.* 36 millim.

Probably a rufous aberration of *C. vetusta*.

8133. Cortyta polycyma. (Plate CCXXXII. fig. 24.)

Hypoglaucitis polycyma, Hmpsn. Tr. Zool. Soc. xix. p. 111, pl. iv. f. 18 (1909).

♀. Head and thorax grey mixed with fuscous brown; antennæ ringed with black; palpi white, black towards tips; fore and mid tibiæ with some blackish; tarsi black ringed with white; abdomen ochreous white, dorsally suffused with brown. Fore wing grey suffused with fuscous brown; a sinuous black subbasal line from costa to submedian fold; antemedial line black, angled outwards below costa, then sinuous; medial area with two indistinct double slightly sinuous lines bent inwards to costa; reniform defined by blackish, narrow and elliptical, a slight blackish line from it to inner margin; postmedial line black, slightly excurved below costa and incurved at discal fold, incurved and somewhat dentate below vein 4, an indistinct dentate line beyond it followed by some white suffusion below the costa; two white points on postmedial part of costa; subterminal line whitish, waved, with some blackish suffusion before it on costal area; a fine dentate black line just before termen; a fine whitish line at base of cilia. Hind wing whitish tinged and irrorated with brown, the terminal area suffused with brown. Underside brownish white; both wings with the terminal area suffused with brown except towards tornus.

Hab. Uganda, Ruwenzori (*Wollaston*), 1 ♀ type; N.E. Rhodesia, Up. Luangwa R. (*Neave*), 1 ♀. *Exp.* 34–38 millim.

8134. **Cortyta phæocyma**, n. sp. (Plate CCXXXII. fig. 25.)

♀. Head, thorax, and abdomen grey suffused with fuscous brown; palpi at base, pectus, and ventral surface of abdomen whitish; tarsi black with pale rings. Fore wing grey suffused with fuscous brown; subbasal line black, sinuous, from costa to submedian fold; antemedial line black, excurved and slightly waved, a small triangular dark mark beyond it representing the claviform; an indistinct double sinuous medial line; reniform with whitish centre defined by black, elliptical, a sinuous blackish line from it to inner margin; postmedial line black, bent outwards below costa, slightly incurved at discal fold, incurved below vein 4, with faint lines before and beyond it; an oblique white mark from postmedial part of costa; subterminal line pale grey, excurved below vein 7 and at middle, with slight black streaks beyond it below vein 7 and at submedian fold; a crenulate black line just before termen. Hind wing whitish tinged with reddish brown, the termen suffused with fuscous brown except towards tornus, a dark patch on vein 1 towards tornus, a waved blackish terminal line; cilia with a fine pale line at base; the underside with the costal area and terminal area to vein 2 tinged and irrorated with brown.

Hab. Transvaal, Warmbad (*Cooke*), 1 ♀ type. *Exp.* 36 millim.

8135. **Cortyta canescens.** (Plate CCXXXII. fig. 26 ♂, 27 ♀.)

Cortyta canescens, Wlk. xiii. 1077 (1857).

♂. Head, thorax, and abdomen pale grey mixed with blackish; palpi black at sides; frons blackish; tegulæ with three faint blackish lines; legs irrorated with blackish, the tarsi blackish ringed with white; abdomen with slight blackish segmental lines, the ventral surface brownish white irrorated with black. Fore wing pale grey slightly tinged with brown and irrorated with blackish; traces of a double sinuous dark subbasal line from costa to vein 1; antemedial line indistinct, double, inwardly oblique below the cell; the medial area with four slight double oblique sinuous brown lines; reniform very faintly defined by brown, irregular; postmedial line blackish, arising from costa towards apex, very oblique, slightly sinuous, and excurved at middle; an indistinct dark line beyond it arising from apex; an indistinct double sinuous brown subterminal line; a slight waved black line before termen, and fine pale line at base of cilia. Hind wing grey-white tinged and irrorated with brown; a faint oblique blackish antemedial line and three faint oblique slightly sinuous double lines beyond the cell; an oblique slightly sinuous blackish postmedial line with faint diffused line beyond it; an indistinct double sinuous

subterminal line; a series of minute black lunules before termen, and a fine white line at base of cilia; the underside white irrorated with brown, a series of black points before termen.

♀. Usually darker.

Hab. Br. E. Africa, Taveta (*Rogers*), 1 ♀; Transvaal, Pretoria, 1 ♀; Natal (*Marshall*), 1 ♀, Estcourt (*Hutchinson*), 2 ♂, 2 ♀, Durban, 1 ♂ type; Aden (*J. J. Walker*), 1 ♂. *Exp.* 36–44 millim.

B. Mid tibiæ of male not dilated and without fringe of scales.

a. Hind tibiæ of male fringed with long hair.

8136. Cortyta grisea.

Polydesma grisea, Leech, Trans. Ent. Soc. 1900, p. 552.

Head and thorax grey mixed with brown and blackish; tibiæ with blackish bands, the tarsi blackish with pale rings; abdomen grey tinged with brown, the ventral surface white. Fore wing pale grey slightly tinged with brown and thickly irrorated with blackish; a rather diffused sinuous blackish subbasal line from costa to submedian fold, defined on outer side by whitish at costa;

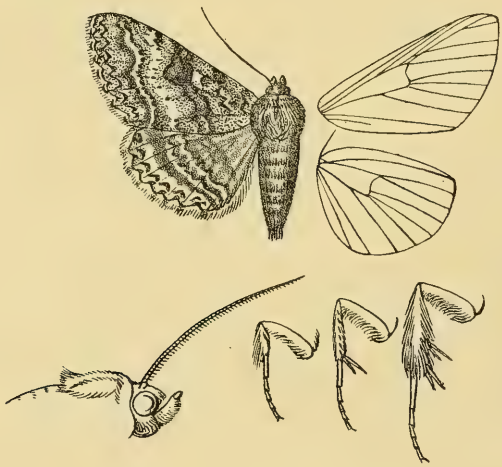


Fig. 82.—*Cortyta grisea*, ♂. ½.

antemedial line indistinct, blackish defined on inner side by white, waved; orbicular and reniform defined by blackish, the former round, the latter large and rather quadrate with a slight curved blackish striga in centre, a white spot between them in the cell; a double brown medial line from costa to reniform and incurved below the cell; a diffused white postmedial band with dark spot at costa, then a series of black points on the veins, excurved at middle; subterminal line whitish defined on each side by rather diffused brown, excurved at

middle and incurved at discal fold and below vein 3; a lunulate black line before termen and a crenulate black terminal line; cilia chequered whitish and fuscous at tips. Hind wing whitish, the basal half suffused with brown, the terminal half slightly irrorated with fuscous; an oblique minutely waved dark postmedial line; a double subterminal line, the inner line minutely waved, the outer rather diffused; a series of black lunules before termen and a crenulate blackish terminal line; cilia with brownish spots at the veins. Underside brownish white; fore wing with black spot in cell and large discoidal spot, curved waved postmedial line with spot at costa, subterminal patches of fuscous at costa and middle and series of blackish lunules before termen; hind wing with small black discoidal spot, slight sinuous medial line, curved waved postmedial line, and series of blackish lunules before termen.

Ab. 1. Wings with a yellowish tinge.

Hab. ? Japan, 1 ♂; C. China, Shanghai, 1 ♀, Chekiang (*Pryer*), 1 ♂, 1 ♀, Ichang (*Hobson*), 3 ♂; W. China, Chiakou-ho (*Pratt*), 1 ♂, Kwei-chou, 1 ♀, Moupin (*Kricheldorf*), 3 ♂ type. *Exp.* 46–58 millim.

b. Hind tibiæ of male smoothly scaled.
  a^1. Wings grey suffused with brown ..... *profesta.*
  b^1. Wings purplish red ..... *ruficolora.*

8137. Cortyta profesta.

Pericyma profesta, Christ. Stett. Ent. Zeit. 1887, p. 165; id. Rom. Mém. ix. p. 39, pl. 2. f. 10; Staud. Cat. Lep. pal. p. 241.
Pericyma sacra, Staud. Iris, x. p. 298, pl. 9. f. 20 (1897).

Head, thorax, and abdomen brown mixed with whitish; antennæ blackish; pectus, legs, and ventral surface of abdomen whitish, the

Fig. 83.—*Cortyta profesta*, ♂. ½.

fore tibiæ and the tarsi black ringed with white. Fore wing whitish suffused with brown and irrorated with fuscous; a slight

sinuous blackish subbasal line from costa to submedian fold; antemedial line blackish, minutely waved; an indistinctly double waved medial line with the blackish discoidal striga on its outer edge; postmedial line double, the inner line black, the outer diffused and followed by a whitish shade, bent outwards below costa, then sinuous, angled inwards below vein 3 to below end of cell; subterminal line indistinct, double, excurved below vein 7 and at middle; a slight dentate blackish line before termen with black points at the interspaces. Hind wing whitish tinged with brown and irrorated with fuscous; traces of a double medial line from lower angle of cell to inner margin; a double slightly waved postmedial line from vein 6 to inner margin; an indistinct double waved subterminal line; a slight waved blackish line before termen, with black points at the interspaces; a fine whitish line at base of cilia; the underside white irrorated with brown, a small black discoidal spot and waved black line before termen.

Ab. 1. Wings with the markings more distinct.

Hab. Armenia; Cyprus, Nicosia (*Miss Bate*, *Bucknill*), 2 ♀; Syria, Mardin; Palestine, 1 ♂, 1 ♀; W. Turkestan, Turcomania, Ferghana. *Exp.* 30–34 millim.

8138. **Cortyta ruficolora.** (Plate CCXXXII. fig. 28.)

Homoptera ruficolora, Hmpsn. J. Bomb. Nat. Hist. Soc. xxi. p. 1222 (1912).

♂. Head and thorax purplish red mixed with some violaceous white; tarsi fuscous ringed with white; abdomen purplish red with whitish segmental lines, the ventral surface tinged with white. Fore wing violaceous red with a faint grey gloss; a slight double waved red subbasal line from costa to median nervure; antemedial line deep red, inwardly oblique and minutely waved; reniform deep red, small, elliptical, a red bar above it from costa; postmedial line red, indistinctly double, excurved below costa, then minutely waved and slightly incurved at submedian fold; a faint pale subterminal line slightly defined on outer side by deep red, excurved below vein 7 and at middle; a terminal series of slight deep red points. Hind wing whitish tinged with red, the terminal area suffused with purplish red; a faint medial series of deep red points on the veins; a faint sinuous postmedial line with deep red points on the veins from vein 6 to inner margin; a terminal series of deep red points; the underside white faintly tinged with reddish.

Hab. Madras, Gooty (*Campbell*), 1 ♂ type. *Exp.* 30 millim.

Genus **EUBOLINA.**

Type.

Eubolina, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 280 (1875)..... *impartialis.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about middle of frons and broadly scaled, the 3rd long and oblique; frons with large tuft of scales; eyes large, round; antennæ of male with fasciculate cilia; thorax clothed almost entirely with scales, the metathorax with depressed

crest; tibiæ smoothly scaled, the fore tibiæ not spined, the mid tibiæ strongly spined, the hind tibiæ spined between the mid and terminal spurs only; abdomen smoothly scaled and without crests. Fore wing with the apex rounded, the termen evenly curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

8139. Eubolina impartialis.

Eubolina impartialis, Harv. Bull. Buff. Soc. Nat. Sci. ii. p. 281 (1875); Smith, Cat. Noct. N. Am. p. 372.

♂. Head and thorax grey-white pencilled with brown; palpi suffused with brown, the extremity of third joint white; pectus white; legs white irrorated with brown, the tarsi fuscous tinged with white; abdomen white dorsally tinged with ochreous brown. Fore wing white irrorated with brown and faintly glossed in parts with blue-green and purple, the terminal area suffused with red-brown; subbasal line slight, blackish, sinuous, from costa to submedian fold; antemedial line black, waved, with a faint dark shade

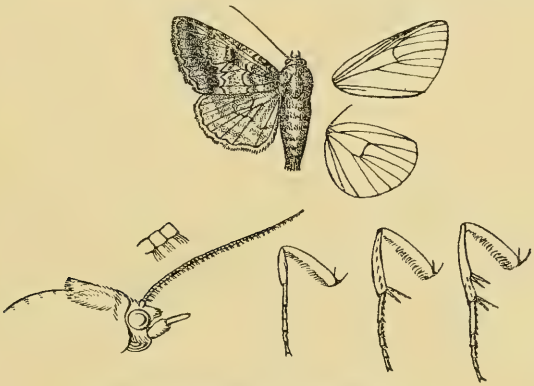


Fig. 84.—*Eubolina impartialis*, ♂. ½.

before it; traces of a sinuous dark medial line from costa to median nervure; reniform obscurely defined by blackish; postmedial line slight, blackish, waved to vein 3, then angled inwards to lower angle of cell and again excurved and waved, some white points beyond it on costa; a diffused blackish shade before the red-brown terminal area; a waved black terminal line. Hind wing white suffused with ochreous brown; traces of a minutely dentate dark postmedial line except on costal area; traces of a pale subterminal line with minute dark streak before it on veins 4 to 2; a waved blackish terminal line; cilia white mixed with brown; the underside white irrorated with brown, a dark discoidal point and curved postmedial line.

Hab. U.S.A., Texas, 1 ♂ type. *Exp.* 38 millim.

Genus **MATIGRAMMA**.

Type.

Matigramma, Grote, Trans. Am. Ent. Soc. iv. p. 22 (1872) ... *pulverilinea*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd moderate; frons smooth; eyes large, round; antennæ of male with fasciculate cilia; thorax clothed almost entirely with scales, the metathorax with depressed crest; tibiæ slightly fringed with hair, the mid tibiæ strongly spined, in male dilated with a groove containing a tuft of hair, the mid and hind tibiæ not spined; abdomen without crests. Fore wing with the apex rounded, the termen evenly curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Hind wing with indistinct sinuous dark medial line.
  a. Fore wing with the ground-colour brown.
    a^1. Fore wing with the postmedial line strongly waved, oblique below vein 4 ..... *nitida*.
    b^1. Fore wing with the postmedial line slightly waved, incurved below vein 4 ..... *pulverilinea*.
  b. Fore wing with the ground-colour grey.
    a^1. Fore wing tinged with rufous ..... *rubrosuffusa*.
    b^1. Fore wing not tinged with rufous ..... *læna*.
B. Hind wing without medial line.
  a. Fore wing without white centre to the reniform ..... *metaleuca*.
  b. Fore wing with white centre to the reniform ..... *perigeana*.

8140. **Matigramma nitida**, n. sp. (Plate CCXXVI. fig. 23.)

♀. Head, thorax, and abdomen brown mixed with grey; pectus and ventral surface of abdomen whiter; tarsi brown ringed with white. Fore wing reddish brown with slight dark irroration; a slight curved dark subbasal line defined on outer side by grey, from costa to submedian fold; antemedial line black defined on inner side by whitish, incurved in cell and at vein 1; a blackish point in middle of cell and slight discoidal lunule; an irregularly waved blackish medial line, double and rather diffused at costa; postmedial line fine, black slightly defined on outer side by grey, oblique to below vein 7, then waved, oblique below vein 4, some whitish points beyond it on costa; subterminal line whitish slightly defined on each side by blackish, waved, oblique below vein 3; a series of black points defined on outer side by whitish just before termen, and a fine whitish line at base of cilia. Hind wing reddish brown tinged with grey and with slight dark irroration; an indistinct double sinuous dark medial line; postmedial line blackish, minutely waved; subterminal line blackish slightly defined on outer side by whitish, minutely waved; a fine crenulate blackish terminal line with black points at the interspaces, and a fine whitish line at base of cilia; the underside grey-white irrorated with brown, a dark discoidal bar with shade above it from costa, indistinct rather diffused waved postmedial and subterminal lines.

Hab. Argentina, Tapia, 1 ♀ type. *Exp.* 30 millim.

8141. **Matigramma pulverilinea.**

Matigramma pulverilinea, Grote, Trans. Am. Ent. Soc. iv. p. 22 (1872); Smith, Cat. Noct. N. Am. p. 375.

Head, thorax, and abdomen brown mixed with greyish, the ventral surface of abdomen paler. Fore wing grey suffused with brown and irrorated with whitish, the postmedial area rather darker; subbasal line dark brown slightly defined on outer side by whitish, sinuous, from costa to submedian fold; antemedial line dark brown slightly defined on inner side by whitish, excurved below costa, then sinuous; a dark medial line excurved in the cell

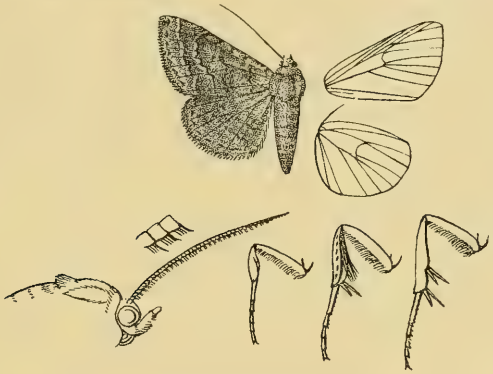


Fig. 85.—*Matigramma pulverilinea*, ♂. ½.

and below submedian fold; reniform faintly defined by whitish, very narrow and constricted at middle; postmedial line dark brown defined on outer side by whitish, bent outwards below costa, then slightly waved, excurved to vein 4, then incurved, some pale points beyond it on costa; subterminal line whitish, slightly angled inwards at discal and submedian folds; a series of dark striæ before termen defined on outer side by whitish. Hind wing grey suffused with brown; an indistinct sinuous dark medial line; postmedial and subterminal lines dark defined on outer side by whitish, minutely waved; a series of dark striæ before termen; the underside grey suffused with brown and irrorated with dark brown, a curved dark postmedial line.

Hab. U.S.A., S. States, Texas, 2 ♂, 2 ♀ type. *Exp.* 32–36 millim.

8142. **Matigramma rubrosuffusa.** (Plate CCXXVI. fig. 24.)

Matigramma rubrosuffusa, Grote, Can. Ent. xiv. p. 172 (1882); Smith, Cat. Noct. N. Am. p. 375.

Head, thorax, and abdomen grey-white irrorated with dark brown; antennæ ringed with black; pectus, legs, and ventral surface of abdomen brownish white, the fore and mid tibiæ banded with blackish, the tarsi black ringed with white. Fore wing grey-white tinged with red-brown and thickly irrorated with blackish; sub-

basal line double, blackish, waved, from costa to vein 1; antemedial line double, blackish, waved; a double waved blackish medial line; a small blackish spot in middle of cell; reniform defined by blackish, small, a whitish spot beyond its lower extremity; postmedial line black, bent outwards below costa, then dentate and produced to black and white points on the veins, at vein 3 retracted to lower angle of cell, then erect, a slight dark shade beyond it and some minute whitish points on costa; subterminal line slight, dark, waved, incurved at discal fold and below vein 3; a slight waved dark terminal line with black points at the interspaces, a fine pale line at base of cilia. Hind wing grey-white tinged with red-brown and irrorated with blackish; a sinuous blackish medial line; postmedial line black, waved; subterminal line faint, diffused, defined on outer side by whitish; a slight waved dark terminal line with black points at the interspaces, and a fine pale line at base of cilia; the underside white, the costal and terminal areas slightly irrorated with brown, a small blackish discoidal spot, slight curved postmedial line with small black spots at discal and submedian folds, and traces of a subterminal line.

Hab. U.S.A., Arizona, 1 ♂, Nogales (*Oslar*), 2 ♂, 2 ♀, Gila Co., Pinal Mts. (*Kunzé*), 1 ♀. *Exp.* 36–40 millim.

8143. **Matigramma læna.** (Plate CCXXVI. fig. 25.)

* *Matigramma læna*, Grote, Can. Ent. xiv. p. 172 (1882); Smith, Cat. Noct. N. Am. p. 375.

Head, thorax, and abdomen grey-white mixed with brown; pectus and ventral surface of abdomen white, the tarsi blackish ringed with white. Fore wing whitish grey tinged with brown and irrorated with dark brown; subbasal line slight, dark defined on inner side by whitish, sinuous, from costa to submedian fold; antemedial line brown, double at costa, waved; an indistinct sinuous brown medial line, double at costa; reniform obscurely defined by brown and with faint whitish points on its outer edge, very narrow and rather sinuous, a dark striga above it from costa; postmedial line blackish, minutely dentate and produced to whitish points on the veins, oblique below vein 3, a slight dark shade beyond it from costa to vein 4, some whitish points beyond it on costa; subterminal line diffused, dark, waved, excurved below vein 7 and at middle; a series of dark striæ before termen defined on outer side by whitish; a fine whitish line at base of cilia. Hind wing whitish tinged with brown and with slight dark irroration; traces of two sinuous brown medial lines; postmedial line slight, brown, dentate, produced to white and dark points on the veins; subterminal line rather diffused, brown, somewhat excurved at middle; a series of dark striæ before termen and fine whitish line at base of cilia; the underside white tinged and irrorated with brown, a slight dark discoidal point, curved postmedial line, traces of subterminal line, and slight waved dark line before termen.

Ab. 1. Darker and more suffused with fuscous brown.

Hab. U.S.A., Texas, 1 ♂, 2 ♀ type. *Exp.* 38–40 millim.

* *Poaphila pulverosa*, Wlk. is a synonym of *Bendis hinna*, Hübn.

8144. **Matigramma metaleuca**, n. sp.
(Plate CCXXVI. fig. 26.)

♂. Head and thorax blackish mixed with white; palpi white at base and with white ring at extremity of 2nd joint; pectus and femora white, the tarsi black ringed with white; abdomen whitish irrorated with black-brown, the ventral surface white. Fore wing suffused and thickly irrorated with black-brown; subbasal line slight, black, from costa to submedian fold; antemedial line indistinctly double, black, waved, rather obliquely curved; an indistinct double waved dark medial line; a black point in middle of cell; reniform defined by blackish; postmedial line double, black, bent outwards below costa, then sinuous, strongly incurved below vein 4, some whitish points beyond it on costa; subterminal line indistinct, dark, waved, excurved below vein 7 and at middle; a series of black points defined on outer side by white before termen; a fine white line at base of cilia. Hind wing white irrorated with brown; a slight dark discoidal striga; traces of a slightly sinuous dark postmedial line and of a subterminal line with blackish points at the veins and small spots at vein 2 and tornus; a series of small black lunules just before termen; cilia white chequered with blackish at tips; the underside white, the costal and terminal areas slightly irrorated with brown, a black discoidal point and series of black points and striæ before termen.

Hab. U.S.A., Arizona, Phœnix (*Kunzé*), 1 ♂ type. *Exp.* 28 millim.

8145. **Matigramma perigeana**, n. sp.
(Plate CCXXVI. fig. 27.)

♀. Head and thorax fuscous brown mixed with grey; tegulæ greyer with a small dorsal black spot; palpi, pectus, and legs grey irrorated with blackish; abdomen pale brown irrorated with black, the ventral surface brownish white. Fore wing fuscous brown mixed with grey and thickly irrorated with black; subbasal line slight, black, from costa to submedian fold; antemedial line rather diffused, blackish, somewhat oblique to submedian fold; the medial area with two indistinct double sinuous blackish lines; reniform small, whitish defined by black and placed on a whitish patch; postmedial line indistinct, blackish, bent outwards below costa, incurved at discal fold, bent inwards from below vein 4 to vein 2, then sinuous, some whitish points beyond it on costa; subterminal line indistinct, blackish, slightly angled outwards below veins 7 and 4, then incurved; a series of slight black striæ faintly defined on outer side by whitish before termen; a fine pale line at base of cilia. Hind wing whitish tinged with brown and with slight dark irroration; a double diffused dark subterminal line; a rather diffused dark line before termen; cilia whitish with a dark line at middle; the underside white irrorated with brown, a slight dark discoidal lunule, and traces of postmedial and subterminal lines.

Hab. Argentina, Mendoza, La Paz (*Baine*), 1 ♀ type. *Exp.* 54 millim.

Subfamily CATOCALINÆ.

ADDENDA AND CORRIGENDA.

VOL. XII.

Page 66. 7179. **Catocala fraxini** insert :—

Ab. *sternecki*, Hirschke, Jahr. Ber. Entom. Ver. Wien, xxi. p. 94 (1911). Hind wing with the blue band more than double as broad, extending on outer side to near termen.

Page 222. 7342 *a*. **Ulothrichopus maccvoodi**, n. sp. (Plate CCXXII. fig. 12.)

♂. Head and thorax white mixed with red-brown, the tegulæ and prothorax mostly rufous; palpi red-brown; antennæ brown with a brown bar between their bases; pectus ochreous white; fore tibiæ with a black bar near tips, the tarsi blackish ringed with white; abdomen bright pink, the hair at base and anal segment brown and white, the ventral surface ochreous white. Fore wing white mostly suffused with rufous and slightly irrorated with dark brown; subbasal line black, curved, from costa to median nervure, some brown beyond it on costa; antemedial line black and oblique to submedian fold, then indistinct and whitish, slightly angled outwards below costa and incurved at vein 1; reniform rufous and white with slight whitish annulus defined on inner side by blackish, its outer edge somewhat dentate, an oblique black bar above it from costa; postmedial line black, indistinct and defined on outer side by whitish on inner half, angled outwards below costa, then oblique and produced to long teeth below veins 6 and 5, then retracted and waved, at vein 2 forming a sinus running inwards and upwards to lower edge of reniform, angled inwards below submedian fold; subterminal line whitish slightly defined on outer side by brown, rather diffused towards costa, bent outwards at vein 7, then dentate, the veins beyond it slightly streaked with black; a faint oblique dark shade from termen below apex. Hind wing bright pink; a narrow black medial band from costa to submedian fold, forming spots below costa and above submedian fold, strongly excurved below vein 5; a blackish subterminal band from costa to vein 2, dentate to termen and cilia between veins 6 and 2; a small terminal spot at vein 1; cilia white towards apex. Underside of fore wing white, an oblique black-brown antemedial shade from below costa to inner margin at the black medial band which is excurved below vein 5, the terminal area black-brown, broad towards costa; hind wing with the costal area white extending beyond the cell to the discal fold, the subterminal band extending to near tornus and becoming terminal below vein 5.

Hab. BURMA, Maymyo (*Mackwood*), 1 ♂ type. *Exp.* 82 millim.

Page 271.

7394. **Agonista** *reducens* insert *Noctua* **vampyrus**, Fabr. Ent. Syst. iii. 2. p. 14 (1794), which has priority.

Page 273. Under **Nyctipao** insert:—

	Type.
Erebus, Latr. Ord. Nat. Crust. & Ins. p. 365 (1810)..... ..	*crepuscularis*

which has priority.

Page 360. 7472. **Speiredonia triloba** insert (syn.) :—

Spirama rosacea, Butl. Ill. Het. B.M. vii. p. 78, pl. 132. ff. 9, 10 (1889).

Page 452.

7576 *a*. **Anua rufescens**, n. sp. (Plate CCXXII. fig. 11.)

♂. Head and thorax ochreous tinged with rufous; antennæ brownish; palpi fuscous mixed with grey; abdomen whitish tinged with brown. Fore wing ochreous suffused with rufous, the costal area more ochreous, the inner half of medial area irrorated with a few black scales; antemedial line indistinct, blackish, almost obsolete towards costa, oblique to submedian fold, then inwardly oblique; a black point in middle of cell; reniform faintly defined by blackish; postmedial line indistinct, blackish, excurved below costa, incurved at discal fold and incurved below vein 4; subterminal line grey defined on inner side by blackish, with two black spots before it below costa where it is slightly excurved below vein 8 and angled outwards below vein 7, reduced to grey and black points between veins 5 and 3, incurved below vein 3, and forming a grey patch defined on outer side by blackish in submedian interspace; some brownish suffusion at apex and a series of minute dark streaks in the interspaces of terminal area. Hind wing whitish suffused with brown; a fuscous subterminal shade, broad towards costa and ending on termen at vein 1; the termen narrowly whitish towards apex; the underside ochreous, the terminal area tinged with fuscous.

Hab. Sierra Leone, Kondita (*Simpson*), 1 ♂ type. *Exp.* 62 millim.

Page 479.

7604 *a*. **Tolna macrosema**, n. sp. (Plate CCXXV. fig. 8.)

♀. Head and tegulæ pale rufous; antennæ fuscous; thorax grey mixed with fuscous brown; tarsi with pale rings; abdomen grey tinged with brown, the basal crests blackish at tips. Fore wing with the basal area dark greyish brown mixed with some rufous; subbasal line black defined on each side by rufous, sinuous, from costa to submedian fold; antemedial line black, obliquely incurved to middle of inner margin; medial area yellowish white suffused with rufous; reniform with faint grey annulus and greyish striga in centre, placed on a black-brown patch from costa defined by black, extending to below the cell where it is pointed, its inner edge oblique and slightly sinuous and its outer edge angled outwords at vein 5; medial line reddish brown, oblique and sinuous from the outer edge of the patch to vein 4, then incurved, the area between it and the patch clear yellowish white; postmedial line black,

waved, obliquely incurved from costa to vein 6 where it is angled outwards, angled outwards at vein 4, then oblique, the area beyond it rufous to vein 6 with some whitish points on costa, then grey-brown slightly irrorated with white, the grey-brown extending at termen to vein 7; subterminal line faint and whitish on the rufous area, then formed by rather diffused black spots to vein 4, then by smaller spots to inner margin, excurved below vein 7 and angled outwards at vein 4, then incurved, a waved blackish line between it and the postmedial line on inner area; a waved dark terminal line with white points at the interspaces. Hind wing fuscous brown, the termen and cilia creamy white from apex to vein 5, the cilia thence with fine pale line at base. Underside of fore wing grey-brown, a diffused dark discoidal spot with yellowish white band beyond it from costa to vein 2, postmedial line oblique to vein 4 then inwardly oblique, a band of dark suffusion before the subterminal line which is bent outwards at vein 7, the apex yellowish white; hind wing grey suffused with brown, a dark discoidal spot, postmedial line indistinct double, curved, filled in with whitish to vein 5, a band of blackish suffusion before the waved subterminal line, a waved dark terminal line.

Hab. Gold Coast, Kumasi (*Sanders*), 1 ♀ type. *Exp.* 56 millim.

Page 481. Genus *Catephiodes* rename **ANOPHIODES**, n. n.

Catephiodes, Beth.-Baker, 1908, nec Hmpsn. Lep. 1905.

Page 482. Under **Ercheia** insert:—

	Type.
Melipotis, Hübn. Verz. p. 260 (1827)	*cyllaria*

which has precedence.

Page 536.

7669. **Achæa** *melicerta* insert *Geometra* **janata**, Linn. Syst. Nat. ed. x. p. 527, which has priority.

Page 598.

7748 *a*. **Parallelia rectivia**, n. sp. (Plate CCXXV. fig. 7.)

♂. Head and thorax red-brown; antennæ dark brown; pectus and legs grey mixed with brown, the tarsi banded brown and white; abdomen grey-brown, the ventral surface white tinged with red-brown except at extremity. Fore wing red-brown, a dark sinuous subbasal line slightly defined on outer side by white, from costa to submedian fold; a rather narrow straight white band from middle of costa to tornus, edged by black lines, the outer line slightly defined on outer side by whitish also the inner line on inner side at costa, some red-brown suffusion near the inner edge of the band and two black discoidal points on it; some white points on apical part of costa; traces of a waved dark subterminal line; cilia grey-brown with a white line at base. Hind wing fuscous brown

with a slight reddish gloss; a pale rufous patch on termen between vein 2 and submedian fold; a fine dark terminal line; cilia white towards apex with a brownish line through them, the grey-brown with a whitish line near base. Underside of fore wing fuscous brown, the costa white irrorated with fuscous to beyond middle, the band white with diffused edges and not reaching costa, the terminal area white irrorated with fuscous from apex to below vein 5 with black points before termen; hind wing grey thickly irrorated with brown, a brownish discoidal spot, postmedial line dark and rather diffused oblique from costa to submedian fold, subterminal line excurved below vein 6, the area before it broadly suffused with brown, a series of black points before termen.

Hab. Gold Coast, Kumasi (*Sanders*), 2 ♂ type. *Exp.* 46 millim.

Vol. XIII.

Page 137. 7919. **Celiptera codo.** (Plate CCXXXII. fig. 30.)

Figured from drawing from type in U.S. Nat. Mus.

Species omitted.

Achæa durfa, Plötz, Stett. Ent. Zeit. xli. p. 299 (1880). W. Africa.
Agnomonia orontes, Plötz, Stett. Ent. Zeit. xli. p. 298 (1880). Cameroons.
Agonista morio, Semp. Reis. Phil., Het. ii. p. 547 (1900). Philippines.
Chalciope angolensis, Weym. Deutsch. Ent. Zeit. 1908, p. 734. Angola.
„ *lutosa*, Grünberg, Denkschr. Med. Ges. Jena, xvi. p. 130 (1910) ..... Germ. S.W. Africa.
Entomogramma postistrigaria, Wlk. xxxiii. 949 (1865). Type lost ..... Ceylon.
Euclidia limbosa, Guen. Noct. iii. p. 294 (1852)..... Senegal.
„ *tarsalis*, Wlk. xxxiii. 986 (1865). Type lost. Ceylon.
Grammodes latifera, Wlk. Entom. v. p. 132 (1870). Type lost. Mt. Sinai.
Homoptera albiflos, Wlk. Char. Undescr. Het. p. 46 (1869). Type lost ..... Honduras.
„ *brevipennis*, Wlk. Char. Undescr. Het. p. 47 (1869). Type lost ..... Honduras.
„ *cinerea*, Morr. Can. Ent. vii. p. 148 (1875); Smith, Cat. Noct. N. Am. p. 371. ? = *Zale undularis*. Massachusetts.
„ *costifera*, Wlk. xxxiii. 886 (1865). Type lost. Ceylon.
„ *focillatrix*, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 402 (1880) ..... Surinam.
„ *gratiosa*, Wlk. Trans. Ent. Soc. (3) i. p. 98 (1862). Type lost, ? *Homopyralis* ..... Brazil.

Homoptera lucimargo, Wlk. Char. Undescr. Het. p. 45 (1869). Type lost ..... Honduras.
„ *lydia*, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 400, pl. ix. f. 49 (1880) ..... Surinam.
„ *niveplaga*, Wlk. Char. Undescr. Het. p. 46 (1869). Type lost ..... Honduras.
„ *obsita*, Guen. Noct. iii. p. 12 (1852). ? = *Zale viridans* ..... Brazil.
„ *phœoleuca*, Wlk. xxxiii. 883 (1865). Type lost. Brazil.
„ *procumbens*, Wlk. xxxiii. 886 (1865). Type lost. Ceylon.
„ *retrahens*, Wlk. xxxiii. 887 (1865). Type lost. Ceylon.
„ *terrena*, Mab. Le Naturaliste, ii. p. 100 (1882). Madagascar.
Hypætra divisa, Wlk. xxxiii. 963 (1865). Type lost ... Ceylon.
„ *griseomaculata*, Snell. Tijd. v. Ent. xxiii. p. 102 (1880). Java.
Hypopyra inconspicua, Herr.-Schäff. Aussereur. Schmett. p. 68, ff. 123–4 (1850). ? *Enmonodia* near *endoxantha*. Cape Colony.
Noctua novita, Herr.-Schäff. Aussereur. Schmett. f. 560 (1869). ? *Safia* ..... Venezuela.
Ophisma amabilis, Wlk. Char. Undescr. Het. p. 91 (1869). Type lost ..... Bengal.
„ *esculeata*, Möschl. Verh. zool.-bot. Ges. Wien, xxxiii. p. 306, pl. xvi. f. 21 (1883) ..... Cape Colony.
„ *ibona*, Plötz, Stett. Ent. Zeit. xli. p. 300 (1880). W. Africa.
„ *lunulifera*, Wlk. xxxiii. 956 (1865). Type lost. S. Africa.
„ *minna*, Guen. Noct. iii. p. 243 (1852) ..... Brazil.
„ *ningi*, Plötz, Stett. Ent. Zeit. xli. p. 300 (1880). W. Africa.
„ *opulenta*, Möschl. Abh. Senck. Ges. xv. p. 86, pl. f. 15 (1888). ? *Noctuinæ* ..... Gold Coast.
„ *perfinita*, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 430 (1880) ..... Surinam.
Ophiusa diagramma, Lower, Tr. R. Soc. S. Austr. xxvii. p. 37 (1903). ? *Parallelia*. Queensland, W. Australia.
„ *digona*, Mab. Bull. Soc. Philom. (7) iii. p. 141 (1879). ? *Parallelia* ..... Madagascar.
„ *salmus*, Guen. Noct. iii. p. 267 (1852). ? *Acronyctinæ*, gen. *Cropia* ..... Haiti.
„ *swinhoei*, Semper, Reis. Phil., Het. ii. p. 557 (1900). *Parallelia* ..... Philippines.
Phalæna pritanis, Cram. Pap. Exot. ii. p. 28, pl. 115. f. D (1779). ? *Ophisma* ..... Surinam.

Pheocyma termina, Grote, Can. Ent. xv. p. 129 (1883); Smith, Cat. Noct. N. Am. p. 368. ? *Noctuinæ*. Arizona.

Phurys continua, Wlk. Trans. Ent. Soc. (3) i. p. 100 (1862). Type lost ..... Hab. ign.

„ *mensurata*, Wlk. Trans. Ent. Soc. (3) i. p. 261 (1862). Type lost ..... S. Brazil.

„ *teretilinea*, Guen. Noct. iii. p. 308 (1852). *Celiptera* ? = *levina*, Cram. ..... S. Brazil.

Placonia selene, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 410, pl. viii. f. 1 (1880). *Safia* ..... Surinam.

Poaphila dividua, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 434 (1880) ..... Surinam.

„ *erubescens*, Maassen, Stübel's Reise, p. 150, pl. vii. f. 12 (1890) ..... Ecuador.

„ *figurata*, Wlk. Trans. Ent. Soc. (3) i. p. 260 (1862). Type lost ..... S. Brazil.

„ *fuscipalpis*, Wlk. Char. Undescr. Het. p. 92 (1869). Punjab.

„ *plagiata*, Wlk. Trans. Ent. Soc. (3) i. p. 260 (1862). Type lost ..... S. Brazil.

„ *revoluta*, Wlk. xv. 1835 (1858); Smith, Cat. Noct. N. Am. p. 360. Type lost ..... U.S.A.

Remigia guenei, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 437, pl. viii. f. 12 (1880) ..... Surinam.

„ *sobria*, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 436, pl. ix. f. 42 (1880) ..... Surinam.

„ *xylomiges*, Snell. Tijd. v. Ent. xxiii. p. 106, pl. 8. f. 7 (1880) ..... Celebes.

Safia ænea, Druce, Biol. Centr.-Am., Het. i. p. 347, pl. 31. f. 5 (1890) ..... Panama.

„ *inconspicua*, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 406 (1880) ..... Surinam.

„ *lucilia*, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 404 (1880) ..... Surinam.

„ *placida*, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 405 (1880) ..... Surinam.

„ *præusta*, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 402, pl. viii. f. 2 (1880) ..... Surinam.

Thyas novenaria, Lucas, Pr. R. Soc. Queensl. xiii. p. 73 (1898). *Anua*, near *amideta* ..... Queensland.

Yrias crespula, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 406 (1880). ? *Safia* ..... Surinam.

Subfamily MOMINÆ.

Proboscis fully developed or aborted; palpi short, upturned or porrect; frons smooth; eyes large, round, clothed with hair; antennæ pectinate, ciliated, or laminate; thorax clothed with scales and hair or hair only, the pro- meso- and metathorax sometimes crested; legs usually clothed with rather long hair and the tarsi with small tufts at the joints, the tibiæ not spined; abdomen usually with hairy crests, in *Epicausis* entirely clothed with woolly hair and with immense anal tuft, in *Elydnodes* without crests. Fore wing usually triangular, in *Elydnodes* with the termen angled at middle; vein 1 *a* weak, not anastomosing with 1 *b*; 1 *c* absent;

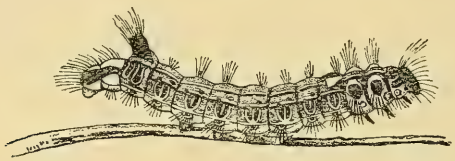


Fig. 86.—Larva of *Moma ludifica*. ½.

veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole, in *Calocasia* vein 10 arising from 7, 8, 9; 11 from cell. Hind wing with veins 1 *a* and 1 *b* present; 1 *c* absent; the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

The *Mominæ* form a very natural and well-characterized subfamily, very homologous in appearance except for *Epicausis* and *Elydnodes*.

The *Larvæ* have all the pro-legs fully developed, the warts with loose tufts of hairs; in *Moma*, *Diphthera*, and *Calocasia* there are dorsal pencils of hair, but in *Charadra* and *Elæodes* there are no hair pencils.

Key to the Genera.

A. Abdomen entirely clothed with long woolly hair and with immense anal tuft ..... Epicausis, p. 337.

B. Abdomen not entirely clothed with long woolly hair and with the anal tuft normal.

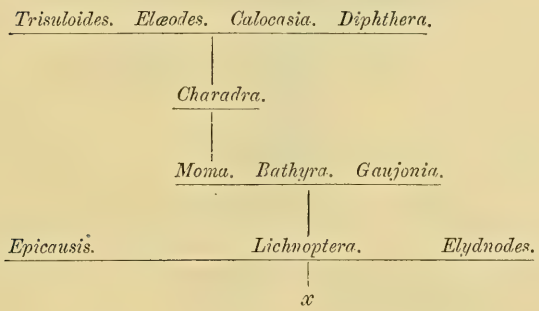
a. Abdomen with dorsal series of crests.

a[1]. Pro-, meso-, and metathorax with divided crests. Bathyra, p. 382.

b[1]. Pro- and metathorax without crests, the metathorax with divided crest ..... Trisuloides, p. 339.

c^1. Thorax without distinct crests.
  a^2. Proboscis aborted, minute.
    a^3. Fore wing with vein 10 from 7, 8, 9 ..... CALOCASIA, p. 360.
    b^3. Fore wing with vein 10 from the cell.
      a^4. Palpi porrect, clothed with long loose hair ..... DIPHTHERA, p. 365.
      b^4. Palpi obliquely upturned, more thickly clothed with hair..... ELÆODES, p. 356.
  b^2. Proboscis fully developed.
    a^3. Fore wing short and broad, the apex not produced.
      a^4. Abdomen with the crests on medial segments large; hind wing with vein 5 from well above angle of cell..... CHARADRA, p. 371.
      b^4. Abdomen with the crests on medial segments small; hind wing with vein 5 from near angle of cell ..... MOMA, p. 376.
    b^3. Fore wing longer and narrower, the apex produced, the termen obliquely curved.
      a^4. Thorax clothed with hair only ..... GAUJONIA, p. 385.
      b^4. Thorax clothed with hair and hair-like scales ..... LICHNOPTERA, p. 388.
b. Abdomen without crests ..... ELYDNODES, p. 399.

PHYLOGENY OF THE MOMINÆ.



Genus **EPICAUSIS.**

	Type.
Epicausis, Butl. A. M. N. H. (5) v. p. 341 (1880)	*smithi.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint hardly reaching to middle of frons and slightly fringed with hair in front, the 3rd short; frons smooth; eyes rather small, round, clothed with long hair; antennæ of male serrate and fasciculate; thorax clothed with long rough hair only and without crests; tibiæ moderately fringed with hair; abdomen clothed with long rough hair, with lateral tufts of hair and immense anal tuft, dorsally flattened. Fore wing rather long and narrow, the apex rounded, the termen evenly curved and not crenulate; vein 3 from before angle of cell; 5 from just above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell more than half the length of wing; veins 3, 4 from angle; 5 fully developed from well above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

8146. Epicausis smithi.

Daphnœura smithii, Mab. Bull. Soc. Ent. Fr. (5) ix. p. clxxiv (March 1880); Saalm. Lep. Madag. p. 152, pl. v. ff. 53, 53 *a*; Kirby, Cat. Lep. Het. p. 203.
Epicausis lanigera, Butl. A. M. N. H. (5) v. p. 342 (Apr. 1880).

Head and thorax crimson mixed with some yellow; antennæ, palpi, lower part of frons except at middle, pectus and legs black; abdomen black, the terminal segments and large anal tuft crimson, the ventral surface with black patch on anal segment, the claspers fringed with some yellow hair. Fore wing fulvous orange; subbasal line double, black, strong, from costa to submedian fold; two antemedial black bars from costa and two lines from submedian fold to inner margin; two postmedial black bars from costa, and two lines from submedian fold to inner margin; a terminal greyish fuscous band indented by wedge-shaped orange marks on the veins

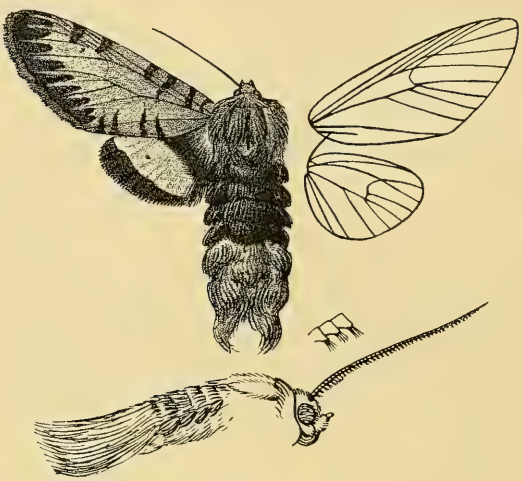


Fig. 87.—*Epicausis smithi*, ♂. ½.

defined by black scales and extending almost to termen. Hind wing with the basal area and inner margin fuscous black with some yellow hair at base and along inner margin; an orange postmedial band, broad at costa, narrowing somewhat to above inner margin near tornus, where it terminates; a terminal black band narrowing to tornus; cilia tinged with grey. Underside of fore wing orange, the basal area black, the terminal area fuscous black, broad at costa and narrowing towards tornus, an orange wedge-shaped mark near its inner edge from costa to vein 5.

Hab. Madagascar, Betsileo (*Cowan*), 1 ♂, 1 ♀, Fianarantsoa (*Cowan*), 1 ♂, 1 ♀ type *lanigera*. *Exp.* 60–70 millim.

Genus **TRISULOIDES.**

	Type.
Trisuloides, Butl. A. M. N. H. (5) vii. p. 36 (1881)	*sericea.*
Tambana, Moore, Lep. Atk. p. 155 (1882)	*variegata.*
Anacronicta, Warr., Seitz, Gross-Schmett. pal. iii. p. 18 (1909) .	*caliginea.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint hardly reaching to middle of frons and rather broadly scaled, the 3rd short; frons smooth; eyes large, round; antennæ of male typically bipectinate with moderate branches, the apex serrate, of female minutely serrate; thorax clothed with rough hair and hair-like scales, the prothorax without crest, the metathorax with divided crest; tibiæ fringed with long hair; abdomen with dorsal series of crests, the crests on medial segments large. Fore wing with the apex rounded, the termen evenly curved and hardly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle of cell or shortly stalked; 5 fully developed from well above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate with moderate branches, the apex ciliated, of female with short branches.

A. Hind wing yellow, the terminal area brown	*pygaria.*
B. Hind wing yellow, the basal area tinged with brown, the terminal area brown	*papuensis.*
C. Hind wing black-brown with broad yellow postmedial band	*luteifascia.*

*8147. **Trisuloides pygaria.** (Plate CCXXXIII. fig. 1.)

Trisuloides pygaria, Warr. Nov. Zool. xix. p. 2 (1912).

♀. Head white, the frons tinged with yellow; palpi and antennæ black-brown, the former with the 2nd joint white in front; tegulæ and patagia white tinged with fulvous; thorax pale red-brown; pectus white tinged with fulvous yellow; tibiæ and tarsi black-brown ringed with white; abdomen red-brown, the ventral surface whitish at base. Fore wing yellow suffused with red-brown and slightly irrorated with white; a curved white subbasal striga from costa; antemedial line brown defined on inner side by whitish, waved, excurved to median nervure, incurved in submedian interspace and excurved above inner margin; a dark brown spot in middle of cell; medial line rather diffused, brown, slightly sinuous, oblique to just below lower angle of cell, then inwardly oblique; a large white patch beyond the cell from costa to vein 3; postmedial line brown defined on outer side by white, slightly sinuous, excurved from below costa to vein 4, then oblique, some small white spots beyond it on costa and a slight brown shade beyond the white angled inwards below vein 3; subterminal line rather diffused, whitish, slightly sinuous, defined on inner side by a dark brown shade to below vein 6, angled outwards below vein 7; a terminal series of red-brown lunules defined on inner side by white; cilia rufous. Hind wing orange-yellow; the terminal area fuscous brown to vein 3, then with brown bar from its inner edge to tornus;

a terminal series of slight rufous lunules defined on inner side by yellow; cilia rufous, yellow towards tornus. Underside of fore wing red-brown, the costal and terminal areas irrorated with white, the cell and area just below it orange-yellow to origin of vein 2, the inner area yellowish white, a yellow spot beyond the cell, a curved yellowish postmedial line with white spot at costa, a yellowish white subterminal shade and crenulate line before termen; hind wing orange-yellow, the costal and terminal areas suffused with brown and irrorated with white, an oblique brown bar from costa to lower angle of cell and postmedial line from costa to vein 2, a faint sinuous subterminal line.

Hab. W. Sumatra, Bencoelen (*Ericsson*), type † ♀ in Coll. Rothschild. *Exp.* 66 millim.

*8148. **Trisuloides papuensis.** (Plate CCXXXIII. fig. 2.)

Trisuloides papuensis, Warr. Nov. Zool. xix. p. 3 (1912); Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.

♂. Head and thorax yellow mixed with red-brown; antennæ brown; palpi, frons, pectus, and legs red-brown, the tibiæ at extremities and the tarsi ringed with white; abdomen reddish brown tinged with grey, the crests darker. Fore wing yellow suffused with red-brown and irrorated with white, the basal half of costal area red-brown, the postmedial area red-brown irrorated and suffused with white; antemedial line rather diffused, brown defined on inner side by yellowish, inwardly oblique and slightly sinuous; a large whitish patch in and beyond end of cell; postmedial line double, red-brown filled in with white, minutely waved, excurved to vein 4, then oblique and incurved at submedian fold; subterminal line whitish defining the dark area, excurved below vein 7, angled inwards at discal fold, excurved and waved at middle, angled outwards at vein 2 and inwards at submedian fold, then oblique to tornus; a terminal series of obscure brown spots. Hind wing orange-yellow; the basal area suffused with red-brown; the terminal area red-brown, its inner edge slightly angled inwards at vein 2, then oblique to tornus; a white mark on termen below vein 2; cilia chequered yellow and brown. Underside of fore wing yellow tinged with red-brown, a diffused brown discoidal patch, a rather diffused red-brown postmedial band, its outer edge angled outwards at vein 7; hind wing yellow tinged with red-brown, a diffused oblique red-brown antemedial shade and a subterminal shade.

Hab. Br. N. Guinea, Mambare R., Biagi (*Meek*), type † ♂ in Coll. Rothschild. *Exp.* 54 millim.

8149. **Trisuloides luteifascia.**

Trisuloides luteifascia, Hmpsn. Moths Ind. ii. p. 437 (1894); Seitz, Gross-Schmett. Indo-Austr. xi. pl. 5.

♀. Head and thorax chocolate-brown mixed with grey-white; tarsi slightly ringed with white; abdomen dark brown slightly

mixed with grey. Fore wing chocolate-brown slightly irrorated with white scales, the inner half of medial area darker, the postmedial area darker and strongly irrorated with grey-white except towards inner margin; slight subbasal blackish marks below costa and cell; antemedial line indistinct, blackish, somewhat oblique to submedian fold where it is angled outwards, then incurved; orbicular and reniform defined by blackish, the former small and somewhat elliptical, the latter slightly angled inwards at median nervure; postmedial line indistinct, blackish defined on outer side by ochreous white, obliquely excurved to vein 4, then oblique and slightly waved, some pale points beyond it on costa; subterminal line whitish defined on inner side by diffused black, excurved below vein 7, excurved and waved at middle; a terminal series of blackish lunules defined on inner side by whitish; cilia chequered red-brown

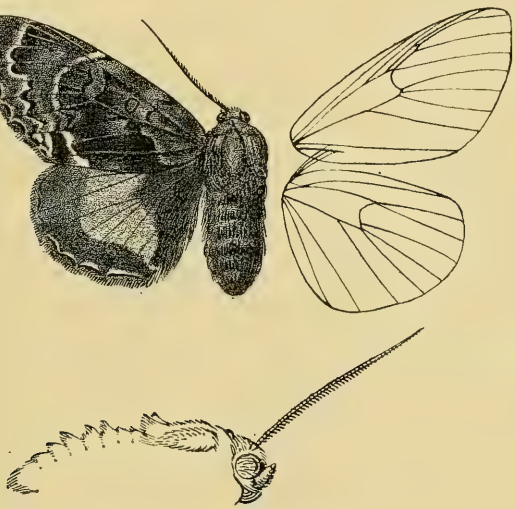


Fig. 88.—*Trisuloides luteifascia*, ♀. ½.

and black-brown. Hind wing black-brown; a broad yellow band just beyond middle, its inner edge angled outwards at discal fold, then obliquely incurved, its outer edge excurved at vein 4, ending at vein 1 and connected with the tornus by a whitish striga; a terminal series of slight black lunules defined on inner side by white from vein 6 to tornus; cilia chequered red-brown and black-brown. Underside of fore wing yellow, the costal area and terminal area except towards tornus red-brown irrorated with whitish, a brown discoidal patch conjoined to the costal area; hind wing brown, the terminal half irrorated with white, a diffused oblique sinuous blackish medial shade with an orange-yellow patch beyond it from lower angle of cell to vein 1, extending in submedian inter-

space to beyond the blackish postmedial line, which is excurved at middle and ends at tornus, a white bar on termen in submedian interspace with a blackish shade before it.

Hab. Sikhim, 2 ♀; Assam, Khásis, 1 ♀ type. *Exp.* 74 millim.

Sect. II. (*Trisuloides.*) Antennæ of male bipectinate, of female minutely serrate.

A. Hind wing dark brown with broad yellow band just beyond middle ..... *sericea.*
B. Hind wing dark brown suffused with blue..... *cærulea.*
C. Hind wing yellow.
a. Hind wing with broad dark terminal band; fore wing with the postmedial line defined by white on outer side and with white patch before it beyond the cell ..... *albiplaga.*
b. Hind wing without dark terminal band; fore wing without white before and beyond the postmedial line ..... *cornelia.*
D. Hind wing brown with a faint yellowish postmedial shade... *plumbea.*

8150. Trisuloides sericea. (Plate CCXXXIII. fig. 3.)

Trisuloides sericea, Butl. A. M. N. H. (5) vii. p. 36 (1881); Hmpsn. Moths Ind. ii. p. 436; Seitz, Gross-Schmett. Indo-Austr. xi. pl. 5.
Trisuloides catocalina, Moore, P. Z. S. 1883, p. 17.

Head and thorax dark brown mixed with whitish; prothorax with a black-brown band; patagia with a black-brown band towards tips defined by whitish bars; tarsi ringed with white; abdomen brown mixed with grey, the crests blackish. Fore wing reddish brown irrorated with white, the medial area brownish except beyond the cell, the postmedial area thickly irrorated with blue-white except on inner area; slight subbasal dark marks in and below the cell; some dark marks in and below the cell and above inner margin before the antemedial line, which is blackish defined on inner side by whitish, excurved below the costa and above inner margin and incurved at vein 1; orbicular defined by black, rounded; reniform defined by black on inner side only; a blackish medial shade, oblique to median nervure, then inwardly oblique; an obscure oblique waved dark line from vein 5 beyond the cell to inner margin; postmedial line indistinctly double, dark brown filled in with whitish, minutely waved, excurved to vein 4, then oblique, a white spot beyond it in submedian interspace; subterminal line blackish defined on outer side by white towards costa and below vein 3, excurved below vein 7, bent inwards at discal fold, incurved and slightly waved below vein 3; a terminal series of slight dark brown lunules; cilia chequered dark brown and whitish. Hind wing dark brown; a broad yellow medial band from costa to submedian fold where its inner edge is somewhat angled inwards; the termen with some white between veins 4 and 1; cilia chequered dark brown and white. Underside of fore wing yellow, the costal and terminal areas grey-brown, the inner area pale, a brown discoidal patch; hind wing brown irrorated with whitish, a diffused oblique dark antemedial line followed by a yellow band except on costal area, the postmedial line minutely waved, excurved at middle.

Hab. W. China, Chang-yang (*Pratt*), 1 ♀; Punjab, Simla (*Harford*), 1 ♂, 1 ♀, Dharmsála (*Hocking*), 1 ♂, 2 ♀; Sikhim (*Lidderdale*), 1 ♀ type; Assam, Shillong, 1 ♀. *Exp.* 58–70 millim.

8151. Trisuloides cœrulea.

Trisuloides cœrulea, Butl. Ill. Het. B.M. vii. p. 35, pl. 128. f. 3 (1889); Hmpsn. Moths Ind. ii. p. 437; Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.

Head and thorax chocolate-brown with some white scales; tarsi slightly ringed with white; abdomen dark greyish brown, the crests and ventral surface chocolate-brown with some white scales. Fore wing dark brown slightly irrorated with white, a broad diffused band of white suffusion from costa beyond middle to termen above tornus; a very indistinct waved blackish subbasal line from costa to submedian fold; antemedial line indistinctly double, blackish

Fig. 89.—*Trisuloides cœrulea*, ♂. ½.

filled in with whitish, waved; orbicular and reniform very indistinctly defined by black-brown, the former round, the latter with brownish lunule in centre; some black suffusion in submedian fold before the postmedial line, which is indistinct, double, brown, waved and almost evenly curved, some pale points beyond it on costa; postmedial area thickly irrorated with grey-white except towards inner margin; subterminal line defined on inner side by diffused black, excurved below vein 7, excurved and slightly waved at middle; a terminal series of faint dark spots defined on inner side by a slight pale line; cilia chequered dark and reddish brown.

Hind wing black-brown suffused with purple-blue except on costal area; the termen with white bar between vein 3 and submedial fold; cilia chequered white and brown, wholly white towards tornus. Underside of fore wing with the basal half dark brown with a yellow antemedial patch from below costa to median nervure, followed by a broad yellow band not extending to costa, the apical area red-brown irrorated with white; hind wing dark brown, the terminal half irrorated with white, a rather diffused curved and slightly waved blackish postmedial line.

Hab. Punjab, Simla (*Harford*), 1 ♀, Dharmsála (*Hocking*), 1 ♂, 1 ♀ type. *Exp.* ♂ 68, ♀ 72 millim.

8152. **Trisuloides albiplaga.** (Plate CCXXXIII. fig. 4.)

Trisuloides albiplaga, Warr. Nov. Zool. xix. p. 4 (1912); Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.

♂. Head, tegulæ, and prothorax blackish, the rest of thorax reddish brown with some of the hairs tipped with white; palpi black, white in front and with white ring at extremity of 2nd joint; sides of frons white; antennæ red-brown with the basal joint white; back of head whitish; tegulæ with white band at middle and white tips; pectus yellow; legs black and white, the tarsi ringed with white; abdomen black-brown with slight whitish segmental lines and broad subdorsal yellow stripes to beyond middle, the ventral surface banded black and white. Fore wing olive with a cupreous gloss largely suffused with black and irrorated with a few white scales; a subbasal white striga from costa connected with the inner edge of a black patch defined by white in and below the cell; antemedial line olive and white defined on each side by black, oblique and slightly sinuous to the submedian fold, where it is angled outwards, angled inwards at vein 1, and excurved above inner margin; orbicular a round black spot defined by olive; a narrow black discoidal lunule with oblique white striæ beyond its upper and lower parts; traces of an oblique blackish shade from beyond lower angle of cell to inner margin; an irregular pure white patch beyond the cell before the postmedial line, which is black defined on outer side by pure white, slightly waved, oblique to vein 4, then inwardly oblique; subterminal line white and oblique to vein 7, where it is bent outwards, then formed by diffused dentate black marks, small between veins 4 and 2; a terminal series of black lunules defined on inner side by white, a more triangular mark below vein 2. Hind wing orange-yellow with a terminal black-brown band, broad at costa and narrowing to tornus, its inner edge oblique to vein 4; cilia chequered brown and whitish. Underside of fore wing with the basal half yellow, the terminal half blackish with oblique white postmedial band from costa to below vein 3, its inner edge angled inwards at vein 5, the terminal area irrorated with white and with white mark above tornus; hind wing with black spot at middle of costa connected with a discoidal striga, the postmedial area white from just below costa to vein 3.

♀. Fore wing with the white markings more distinct, the antemedial line whiter with a short streak beyond it in submedian fold, the white patch beyond the cell larger and extending to the costa.

Hab. Assam, Khásis, type † ♂, ♀ in Coll. Rothschild. *Exp.* 68 millim.

8153. **Trisuloides cornelia.**

Acronicta cornelia, Staud. Stett. Ent. Zeit. 1888, p. 246; id. Rom. Mém. vi. p. 393, pl. 6. f. 2; id. Cat. Lep. pal. p. 133; Seitz, Gross-Schmett. pal. iii. pl. 4.
Diphthera honrathi, Græs. Berl. Ent. Zeit. 1888, p. 315.

♂. Head, thorax, and abdomen fuscous brown tinged with purplish grey, a line behind the tegulæ, the tips of patagia and metathoracic crest and the abdominal crests darker; tarsi banded with blackish. Fore wing fuscous brown tinged with purplish grey, slight blackish irroration on basal half of costal area and submedian fold; a subbasal black striga from costa, minute streak above subcostal nervure and striga from cell; antemedial line double, black, the inner line obsolescent, angled outwards below costa, in submedian fold and above inner margin, connected with the postmedial line by a small white spot in submedian fold; orbicular and reniform with blackish centres and whitish annuli defined by black, the former small, round, the latter with whitish striga in centre; a medial blackish bar from costa to the reniform and incurved sinuous line from lower angle of cell to inner margin; postmedial line with small blackish spot at costa, then almost obsolete to vein 2, strongly incurved below vein 4 and slightly angled outwards at vein 1, some pale points beyond it on costa; subterminal line blackish, incurved below costa, excurved below vein 7, excurved and slightly sinuous at middle, bent inwards at vein 2; cilia chequered brown and whitish. Hind wing orange-yellow; a small patch of brown suffusion at apex; a dark brown terminal line; cilia dark brown slightly intersected with whitish at the veins. Underside of fore wing yellow to the postmedial line except the costa, a black discoidal lunule, a yellow mark at tornus; hind wing with the costal area slightly irrorated with brown, a black discoidal spot, and traces of a sinuous subterminal line from costa to vein 2.

Hab. E. Siberia, Ussuri, 1 ♂. *Exp.* 48 millim.

8154. **Trisuloides plumbea.** (Plate CCXXXIII. fig. 5.)

Plataplecta plumbea, Butl. Trans. Ent. Soc. 1881, p. 184.

Head, thorax, and abdomen white mixed with fuscous brown; antennæ brown except at base; palpi with brown patch at side of 2nd joint; frons with brown line at middle; tegulæ with black line at base; fore tibiæ and tarsi banded with blackish; abdomen with the dorsal crests black. Fore wing silvery white tinged with

olive fuscous and irrorated with blackish, the terminal area pale purplish brown; subbasal line black, produced to a short streak on subcostal nervure and ending at submedian fold; the antemedial area with a blackish shade from costa to vein 1; antemedial line black, waved, slightly angled outwards below costa and cell; orbicular and reniform incompletely defined by black, the former small, round, the latter with some fuscous in centre; a medial blackish shade from costa to median nervure, and indistinct waved line from cell to inner margin; postmedial line black, bent outwards below costa, then dentate and produced to white and black points on the veins, incurved below vein 4; subterminal line black, dentate, excurved below vein 7 and at middle; a terminal series of small black lunules defined on inner side by white. Hind wing reddish brown with a faint yellowish postmedial shade and series of white striæ just before termen; cilia chequered white and brown; the underside brownish ochreous, the terminal area irrorated with fuscous, a black discoidal lunule, waved postmedial line ending at tornus, and terminal series of black striæ.

Hab. Japan, Tokio (*Maries*), 1 ♀ type, ♂ in Coll. Rothschild. *Exp.* 46 millim.

Sect. III. (*Tambana.*) Antennæ of male with fasciculate cilia.

A. Hind wing orange-yellow.
  a. Fore wing with oblique wedge-shaped dark mark beyond middle of the postmedial line ..... *catocalina.*
  b. Fore wing without oblique dark mark beyond middle of the postmedial line.
    a^1. Fore wing without white spots above and below base of vein 6..... *variegata.*
    b^1. Fore wing with white spots above and below base of vein 6.
      a^2. Hind wing with the terminal area suffused with brown..... *subflava.*
      b^2. Hind wing with the terminal area not suffused with brown ..... *albitessellata.*
B. Hind wing brown, the inner area orange-yellow ..... *entoxantha.*
C. Hind wing pale yellow ..... *flavala.*
D. Hind wing not yellow.
  a. Fore wing with pale patch beyond the cell.
    a^1. Hind wing uniform brown ..... *nitida.*
    b^1. Hind wing ochreous white suffused with brown..... *caliginea.*
  b. Fore wing without pale patch beyond the cell.
    a^1. Hind wing yellowish white ..... *pallidipennis.*
    b^1. Hind wing whitish tinged with red-brown..... *infausta.*
    c^1. Hind wing whitish suffused with fuscous brown ... *obscura.*

*8155. Trisuloides catocalina.

Tambana catocalina, Moore, Lep. Atk. p. 156, pl. v. f. 3 (1882).
Trisuloides polyphænaria, Warr. Nov. Zool. xix. p. 3 (1912); Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.

♀. Head and thorax white tinged with fulvous yellow; antennæ brown; palpi at sides, pectus and legs pale red-brown; abdomen yellow, the crests brown. Fore wing white tinged with red-brown;

a brownish subbasal line from costa to submedian fold; a band of brown suffusion on antemedial area; antemedial line brown defined on inner side by white, slightly curved; a diffused medial brown line, obliquely curved from costa to median nervure, then inwardly oblique, some greenish on it in the cell with some orange before and beyond it; postmedial line brownish, arising at vein 7, excurved to vein 4, then incurved; the postmedial area suffused with greyish brown, faintly below vein 4 and emitting an oblique wedge-shaped mark to termen below vein 4; a rather diffused incurved white subterminal line from costa to vein 6 with some red-brown suffusion beyond it on apical area; a terminal series of small triangular reddish brown spots; cilia white mixed with reddish brown. Hind wing orange-yellow; the terminal area cupreous brown from apex to vein 3; a terminal series of small brown spots defined on inner side by whitish; cilia chequered white and reddish brown. Underside of fore wing yellow, a large brown discoidal spot and diffused curved postmedial band from costa to vein 2; hind wing with diffused brown mark from costa to lower angle of cell and slight subterminal shade from costa to vein 2; the terminal area of both wings whitish.

Hab. Sikhim; Java, Palaboehan, Ratoe (*Frühstorfer*), type † ♀ *polyphœnaria* in Coll. Rothschild. *Exp.* 42–46 millim.

8156. **Trisuloides variegata.** (Plate CCXXXIII. fig. 6.)

Tambana variegata, Moore, Lep. Atk. p. 155 (1882); Hmpsn. Moths Ind. ii. p. 436; Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.

♂. Head and thorax brownish fulvous; palpi red-brown with the extremity of 1st joint white; a white ring round base of antennæ; the back of head and edges of tegulæ white, the patagia and mesothorax with white bars; legs red-brown, the tibiæ and tarsi ringed with white; abdomen fulvous brown irrorated with white, the sides orange towards base. Fore wing fulvous brown with a purplish grey gloss and irrorated with white; subbasal line indistinct, double, white, waved, from costa to submedian fold; antemedial line indistinct, double, white, waved; an obscure, diffused fulvous brown medial shade; two white points at angles of cell; postmedial line indistinctly double filled in with white scales, slightly bent outwards below costa, excurved to vein 3, then incurved; an indistinct somewhat dentate dark subterminal line defined on outer side by short white streaks on the veins, angled outwards at vein 7 and excurved at middle. Hind wing orange, the terminal area suffused with red-brown except at tornus, the termen and cilia with some white scales. Underside orange; fore wing with obscure brown discoidal spot, the terminal area suffused with red-brown; hind wing with the terminal half of costal area and the terminal area suffused with red-brown.

Hab. Sikhim (*Lidderdale, Möller*), 5 ♂ type. *Exp.* 56–60 millim.

8157. **Trisuloides subflava.** (Plate CCXXXIII. fig. 7.)

Trisuloides subflava, Wileman, Entom. 1911, p. 31; Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.

♂. Head white; antennæ blackish except at base; palpi with the 1st and 2nd joints black at sides except in front, the 3rd joint brown; frons black above; tegulæ white, black at base and with black spots at middle; thorax dark brown mixed with white, the basal half of patagia white with oblique black bars; pectus and legs white, the tibiæ and tarsi banded with black; abdomen dark brown mixed with white, the sides orange-yellow towards base, the ventral surface white towards base. Fore wing dark brown mixed with some rufous and irrorated with white; subbasal black spots below costa and cell defined at sides by white; an oblique blackish bar from costa before the antemedial line, which is blackish, rather inwardly oblique, angled outwards below costa, in submedian fold, and above inner margin; orbicular a small white spot defined by blackish; reniform a **C**-shaped white mark defined on inner side by black and with rather elongate white spots beyond it above and at middle; an oblique black shade from costa to the orbicular, and oblique slightly sinuous line from lower angle of cell to inner margin; postmedial line blackish, defined on outer side by white towards costa, angled inwards below costa, then slightly bent outwards, then minutely waved, oblique below vein 4 and excurved below submedian fold; subterminal line blackish, defined on outer side by white towards costa and with slight white spots at veins 5 and 2, waved, excurved below vein 7 and at middle; a crenulate whitish terminal line; cilia intersected with white at the veins. Hind wing orange-yellow; the termen narrowly brown except at tornus with a crenulate orange-yellow terminal line on it; cilia chequered brown and white. Underside of fore wing orange-yellow, a brown patch in end of cell and some brown suffusion beyond its lower angle, a curved brown postmedial line with the area beyond it pale brown; hind wing with large white patch beyond the cell from costa to vein 3 and streak on vein 2, a curved red-brown postmedial line from costa to vein 2, the area beyond it red-brown mixed with white, the white extending on termen to vein 1.

♀. Fore wing with the discoidal mark reduced to small spots above and below; hind wing with the termen more broadly brown with darker streaks on the veins.

Hab. W. China, Omei-shan, 2 ♀; Formosa, Rantaizan, type † ♂ in Coll. Wileman. *Exp.* 56 millim.

8158. **Trisuloides albitessellata,** n. sp. (Plate CCXXXIII. fig. 8.)

♀. Head white; palpi with the 2nd joint brown behind and with a dark mark in front at extremity; frons and vertex of head with brown bars; antennæ brown except towards base; tegulæ

white, brown at base and with brown bands towards tips; thorax variegated red-brown and white; pectus and legs white, the fore and mid tibiæ with dark brown bands at middle and extremities, the hind tibiæ with red-brown bands, the tarsi with dark brown bands; abdomen orange, a dorsal brown streak intersected by white segmental lines, the extremity brown, the ventral surface white tinged with brown. Fore wing fulvous brown thickly irrorated with white; an oblique white bar from base of costa; subbasal line white, angled outwards below costa, then oblique and ending at submedian fold; antemedial line dark brown slightly defined on each side by white, angled outwards below costa, then oblique and slightly sinuous, angled outwards in submedian fold and inwards at vein 1; orbicular and reniform defined by blackish, the former small, round, the latter narrow, with white lunules in its upper and lower parts and white patches beyond it above and below vein 6; a dark brown medial line, angled outwards to lower angle of cell, then oblique and sinuous; postmedial line dark brown faintly defined on outer side by white and with more prominent white points at veins 5, 2, and 1, strongly defined on each side by white at costa, bent outwards below costa, slightly incurved at discal fold, incurved and waved below vein 4, some white points beyond it on costa; subterminal line dark brown slightly defined on outer side by white and with more prominent white marks at veins 5 and 2, somewhat dentate, angled outwards at veins 7, 6 and excurved at middle; a terminal series of brown lunules defined by a crenulate white line; cilia with white points at the veins. Hind wing orange-yellow; a fine red-brown terminal line; cilia chequered red-brown and white. Underside of fore wing orange-yellow, the apical area with slight brownish suffusion; hind wing with the area beyond the cell suffused with white extending to vein 3 and at termen to vein 2, a faint brownish bar from middle of costa and a curved slightly waved postmedial line from costa to vein 3.

Hab Assam, Khásis, 1 ♀ type. *Exp.* 66 millim.

*8159. **Trisuloides entoxantha.** (Plate CCXXXIII. fig. 9.)

Moma entoxantha, Hmpsn. Moths Ind. ii. p. 435 (1894); Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.

♂. Head and thorax yellowish mixed with reddish brown; palpi blackish, the extremity of 2nd joint white; pectus and femora orange, the tibiæ and tarsi dark brown ringed with white; abdomen orange, the extremity and ventral surface except at base orange, the crests black. Fore wing yellowish almost entirely suffused with red-brown tinged with sap-green and irrorated with white; a whitish subbasal striga from costa and small spots below costa and cell; antemedial line brown defined on inner side by some white scales, minutely waved, oblique below submedian fold; orbicular and reniform defined by brown, the former small,

round, the latter strongly constricted at middle and slightly angled inwards at median nervure; a faint brown medial shade from costa to the reniform and an oblique waved line from just beyond lower angle of cell to inner margin; postmedial line brown slightly defined on outer side by whitish and with small white spot at inner margin, excurved below costa, then waved, slightly incurved at discal fold, incurved below vein 3 and angled outwards at vein 1, some whitish points beyond it on costa; subterminal line black-brown, angled inwards below costa and outwards at veins 7, 6, excurved and dentate at middle, and angled inwards at vein 2, some whitish beyond it at tornus; a lunulate black-brown terminal line. Hind wing dark reddish brown, the basal and inner areas orange; cilia chequered dark brown and white. Underside of fore wing with the basal half orange, the terminal half dark brown with some white irroration on terminal area, a postmedial white spot on costa followed by slight whitish streaks on the veins, a white spot at tornus; hind wing with the basal and inner areas orange, the rest of wing dark brown with a wedge-shaped bluish white postmedial patch from costa to vein 5, a subterminal band from costa to vein 4 followed by streaks on veins 3 and 2, and patches of bluish white irroration on termen.

Hab. Sikhim (*Möller*), type † ♂ in Coll. Rothschild. *Exp.* 44 millim.

8160. **Trisuloides flavala.** (Plate CCXXXIII. fig. 10.)

Acronycta flavala, Moore, P. Z. S. 1867, p. 46; Hmpsn. Moths Ind. ii. p. 203; Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.

♂. Head and thorax white mixed with some brown; palpi with the 2nd joint brown at sides; antennæ brown; patagia with brown bars near tips; tibiæ and tarsi with brownish bands; abdomen brown, the base and ventral surface except at extremity ochreous white. Fore wing white irrorated and suffused with bronze-brown, a white patch beyond the cell from costa to vein 4; a slight brown subbasal line from costa to submedian fold crossed by a minute streak in the cell; a slightly sinuous brown antemedial line, angled outwards below costa and inwards at vein 1, with a slight brown mark before it below the costa; orbicular and reniform small, very indistinctly defined by brown, the former round, the latter rather constricted at middle; a dark medial line, angled outwards to lower angle of cell, then oblique and slightly sinuous; postmedial line slight, brown, bent outwards below costa, then minutely waved, excurved to vein 4, then incurved; subterminal line rather diffused, dark brown defined on outer side by whitish, angled outwards at veins 7, 6, 4, 3. Hind wing pale yellow, the inner half suffused with reddish brown to the somewhat sinuous brown subterminal band, with dentate outer edge ending at tornus; a terminal series of brown striæ; cilia white chequered with brown at tips. Underside of fore wing pale yellow, a brown discoidal patch, a brown

subterminal band diffused on outer side and with sinuous inner edge; hind wing with sinuous brown subterminal band ending at tornus.

Hab. Sikhim (*Möller*), 3 ♂; Bhután (*Dudgeon*), 1 ♂. *Exp.* 42 millim.

8161. Trisuloides nitida.

Aplectoides nitida, Butl. A. M. N. H. (5) i. p. 197 (1878); id. Ill. Lep. Het. B.M. iii. p. 16, pl. xlv. f. 1; Seitz, Gross-Schmett, pal. iii. pl. 3.
Aplectoides moupinensis, Leech, Trans. Ent. Soc. 1900, p. 527.

Head and thorax white mixed with dark brown; frons with black-brown band; antennæ brown except at base; tegulæ with two black-brown lines near base; patagia with two black-brown bars near extremities; the pro- meso- and metathorax with black-brown bars; pectus brown; tarsi banded black-brown and whitish; abdomen brown. Fore wing whitish suffused in parts with bronze-brown and slightly irrorated with dark brown; a black-brown mark

Fig. 90.—*Trisuloides nitida*, ♂. $\frac{1}{1}$.

at base of costa; subbasal brown striæ from costa and cell with a black-brown streak between them in the cell; antemedial line double, dark brown, slightly angled outwards below costa, then excurved and incurved at vein 1; orbicular and reniform cupreous brown, the former small, round, defined by black, the latter defined by black on inner side and below, a black streak between them in the cell and a black streak beyond the latter below vein 5 to the subterminal line; a white patch before the postmedial line from below costa to vein 5; a slight oblique dark shade from lower angle of cell to inner margin; postmedial line double, dark brown,

filled in with white towards costa, excurved to vein 5, then incurved and dentate; subterminal line white defined on inner side by blackish and with a band of black-brown suffusion before it, excurved below vein 7, incurved at discal fold, and angled outwards at veins 4, 3; a terminal series of indistinct dark lunules faintly defined on inner side by white; cilia intersected with white at the veins. Hind wing brown, the cilia with white mixed; the underside with dark shade from costa to lower angle of cell and indistinct diffused curved postmedial and subterminal lines.

Ab. 1. *moupinensis*. Fore wing with the ground-colour nearly uniform purplish grey and the patch beyond the cell slightly paler than the ground-colour.

Hab. Japan, Tokio (*Maries*), 1 ♂, 1 ♀, Yokohama (*Jonas, Pryer*), 2 ♂, 2 ♀ type; W. China, Ta-chien-lu (*Pratt*), 1 ♀, Nitou, 1 ♂, Pu-tsu-fang, 1 ♀, Wa-ssu-kou, 2 ♂, Kia-ting-fu, 1 ♀, Moupin (*Kricheldorf*), 1 ♂ type *moupinensis*. *Exp.* 46–54 millim.

8162. Trisuloides caliginea.

Aplectoides caliginea, Butl. Trans. Ent. Soc. 1881, p. 185; Staud. Rom. Mém. vi. p. 402, pl. 6. f. 9; id. Cat. Lep. pal. p. 131; Seitz, Gross-Schmett. pal. iii. pl. 3.
Moma nitida, Græs. Berl. Ent. Zeit. 1888, p. 315 (nec Butl.).

Head and thorax red-brown mixed with whitish and dark brown; palpi with black patch at side of 2nd joint; frons with black band; tegulæ with dark line at middle; patagia with black bar at middle; tibiæ and tarsi banded with black and whitish; abdomen red-brown. Fore wing pale reddish brown tinged with grey and suffused and irrorated with black-brown, a whitish patch tinged with red-brown beyond the cell; subbasal line double, blackish, sinuous, from costa to submedian fold; antemedial line double, blackish, sinuous; orbicular small, round, defined by black; reniform rufous with pale annulus, defined by black on inner side and below, an indistinct sinuous brown medial line; postmedial line double, blackish, slightly bent outwards below costa, then somewhat dentate, slightly incurved at discal fold, incurved below vein 4, some pale points beyond it on costa; subterminal line pale defined on inner side by black forming somewhat dentate marks at middle, waved, angled outwards at veins 7, 6, 4, 3; a terminal series of small black lunules defined on inner side by whitish; cilia red-brown intersected with whitish at the veins. Hind wing pale red-brown, the terminal area rather darker; the underside paler, the costal and terminal areas irrorated with red-brown, a dark discoidal striga, indistinct diffused curved postmedial and subterminal lines, and terminal series of dark striæ.

Hab. E. Siberia, Amurland, 2 ♂, Ussuri; Japan, Tokio (*Maries*), 1 ♂, 1 ♀ type, Yokohama (*Jonas, Pryer*), 2 ♀; Corea, Gensan (*Leech*), 1 ♂, 1 ♀; C. China, Kiukiang (*Pratt*), 1 ♀; Ichang (*Mrs. Pratt*), 1 ♀; W. China, Chang-yang

(*Pratt*), 1 ♂, 1 ♀, Wa-shan (*Pratt*), 1 ♂; Chia-kou-ho (*Pratt*), 1 ♂, Ta-chien-lu (*Pratt*), 1 ♀. *Exp.* 42–58 millim.

8163. **Trisuloides pallidipennis.** (Plate CCXXXIII. fig. 11.)

Tambana pallidipennis, Warr. Nov. Zool. xix. p. 5 (1912); Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.

♂. Head, thorax, and abdomen black-brown irrorated with whitish, the tarsi tinged with white. Fore wing dark brown with a cupreous gloss and thickly irrorated with grey-white; subbasal line blackish, double at costa and ending at submedian fold; antemedial line double, blackish, sinuous, the outer line slightly angled outwards below costa and cell; orbicular and reniform whitish defined by black, the former small, round, the latter elliptical, a black streak between them; a sinuous blackish medial line; postmedial line double, blackish, waved, excurved to vein 4, then incurved, some whitish points beyond it on costa; subterminal line whitish broadly defined on inner side by brown suffusion, angled outwards at veins 7, 6, 4, 3; a terminal series of small black lunules defined on inner side by a slight whitish line. Hind wing glossy yellowish white; a slight subterminal band of brown suffusion; cilia brown; the underside with the costal area irrorated with red-brown, the terminal area suffused with red-brown narrowing to tornus, a slight red-brown discoidal striga and diffused postmedial line from costa to vein 2.

♀. Hind wing with the terminal area more suffused with brown.

Hab. W. Java, Preanger, 5000′ (*Sythoff*), 1 ♂, 1 ♀. *Exp.* ♂ 46, ♀ 48 millim. Type † in Coll. Rothschild.

8164. **Trisuloides infausta.** (Plate CCXXXIII. fig. 12.)

Mamestra infausta, Wlk. ix. 237 (1856); Hmpsn. Moths Ind. ii. p. 436; Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.
Tambana nigra, Warr. Nov. Zool. xix. p. 5 (1912); Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.
Tambana fuscipennis, Warr. Nov. Zool. xix. p. 5 (1912); Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.

♂. Head, thorax, and abdomen black-brown irrorated with grey-white; pectus more rufous; tarsi ringed with white. Fore wing dark brown with a cupreous gloss and thickly irrorated with grey-white; subbasal line blackish, double at costa and ending at submedian fold; antemedial line double, blackish, waved; orbicular and reniform defined by blackish, the former small, round, a blackish streak between their lower parts; an indistinct sinuous dark medial line; postmedial line double, blackish, waved, incurved below vein 4; subterminal line whitish defined on inner side by blackish, forming somewhat dentate marks, angled outwards at veins 7, 6, and excurved at middle; a terminal series of small

black spots defined on inner side by a slight whitish line. Hind wing whitish tinged with reddish brown, the terminal area suffused with reddish brown narrowing to tornus; the underside with the costal and terminal areas suffused with reddish brown, traces of diffused postmedial and subterminal lines.

♀. Hind wing rather browner.

Hab. Punjab, Simla (*Harford*), 2 ♂, 1 ♀, Dalhousie (*Harford*), 1 ♂; Assam, type † ♂ *nigra* in Coll. Rothschild (*Badgley*), 1 ♂, 1 ♀, Shillong (*Parish*), 3 ♀, Khásis, 1 ♀, Silhet, 1 ♀ type; Burma, Bernardmyo (*Doherty*), type † ♀ *fuscipennis* in Coll. Rothschild. *Exp.* 46–54 millim.

8165. Trisuloides obscura. (Plate CCXXXIII. fig. 13.)

Aplectoides obscura, Leech, Trans. Ent. Soc. 1900, p. 527; Seitz, Gross-Schmett. pal. iii. pl. 3.

♂. Head and thorax black-brown irrorated with grey-white; pectus pale brown; tarsi ringed with white; abdomen brown, some whitish at sides at base, the extremity and ventral surface irrorated with whitish. Fore wing dark brown thickly irrorated with grey-white; subbasal line indistinct, blackish, from costa to submedian fold; antemedial line double, blackish, sinuous, angled outwards at submedian fold and inwards at vein 1; orbicular and reniform small with slight whitish annuli defined by blackish, the former round, a dark streak between their lower parts; an indistinct diffused dark medial line; postmedial line indistinctly double, blackish, bent outwards below costa, then somewhat dentate, slightly incurved at discal fold and bent inwards at vein 3, some pale points beyond it on costa; subterminal line whitish defined on inner side by rather diffused black-brown, excurved below vein 7 and angled outwards at veins 4, 3; a terminal series of small blackish spots. Hind wing whitish suffused with fuscous brown, the terminal area somewhat darker; the underside with indistinct diffused postmedial line.

♀. Hind wing more uniform brown.

Hab. W. China, Ni-tou, 1 ♂, 1 ♀, Chang-yang (*Pratt*), 1 ♀, Washan (*Pratt*), 1 ♂ type, Chia-kou-ho, 1 ♀, Chou-pin-sa, 1 ♀, Ta-chien-lu (*Pratt*), 1 ♂, 1 ♀; Kashmir, 1 ♀; Punjab, Kulu, Sultanpur (*G. Young*), 1 ♀. *Exp.* 46–52 millim.

Sect. IV. Antennæ of male minutely ciliated.

A. Hind wing with the basal area orange-yellow ..... *glauca.*
B. Hind wing with the basal area brown ..... *c-album.*

8166. Trisuloides glauca.

Trisuloides glauca, Hmpsn. J. Bomb. Nat. Hist. Soc. xi. p. 455 (1897); Seitz, Gross-Schmett. Indo-Austr. xi. pl. 4.

♂. Head and tegulæ white; palpi black, the extremity of

1st joint and base of 2nd white in front, the extremity of 2nd joint white; frons with lateral black spots; antennæ blackish; thorax red-brown mixed with blackish and white, the patagia with white patches at middle; pectus and femora brownish white, the tibiæ and tarsi black-brown, the fore tibiæ and the tarsi ringed with white; abdomen black-brown mixed with grey, the basal half red-brown at sides. Fore wing sap-green irrorated slightly with white, some white with a flesh tinge in and below basal half of cell, the terminal area white tinged with flesh colour; subbasal black points below costa and cell and a minute streak above subcostal nervure, a white mark beyond it on costa; antemedial line black defined on inner side by white, the black obsolescent from

Fig. 91.—*Trisuloides glauca*, ♂. ½.

below costa to median nervure, waved; orbicular and reniform flesh-white ringed with black, the former minute, round, the latter irregular, the inner side of centre defined by olive-brown, a black streak between them in lower part of cell; a faint sinuous dark medial shade; postmedial line black defined on outer side by white, oblique and sinuous to vein 4, then incurved and waved, angled outwards at vein 1, some white points beyond it on costa; subterminal line only defined by the terminal area being flesh-white except at apex with a series of small red-brown lunules before termen, the line excurved below vein 7, angled inwards at discal fold, then waved, excurved at middle and incurved below vein 3; a terminal series of black striæ; cilia reddish brown intersected with white. Hind wing orange-yellow, the terminal area black-brown, broadly at costa, narrowing to tornus; the medial part of termen with blackish striæ defined on inner side by white; cilia white chequered with brown from apex to vein 2, brownish towards tornus. Underside of fore wing with the basal half of cell and area below the cell yellow, a yellow discoidal spot produced to a point on outer side, a postmedial white spot on costa and the terminal area white except at apex; hind wing dark brown irrorated with white, the inner area ochreous.

Hab. Assam, Khásis, 1 ♂ type. *Exp.* 40 milim.

8167. Trisuloides c-album. (Plate CCXXXIII. fig. 14.)

Tambana c-album, Leech, Trans. Ent. Soc. 1900, p. 525.

♀. Head and thorax dark brown mixed with white and some red-brown; pectus whitish; tarsi ringed with white; abdomen brown mixed with white. Fore wing bronze-brown suffused with purple-grey; subbasal line blackish, crossed by a short black streak in the cell and ending at submedian fold; antemedial line double, blackish, sinuous, angled outwards at submedian fold and incurved at vein 1; orbicular minute, defined by black; reniform elliptical, defined by black, with white annulus above and on inner side and yellow streak from middle of outer edge; medial line indistinct, blackish, sinuous, a blackish patch beyond it below submedian fold; post-medial line double, blackish filled in with white and with some white before it towards costa, slightly bent outwards below costa, then minutely dentate, incurved below vein 4 and excurved at vein 1; subterminal line blackish, somewhat dentate, excurved below vein 7 and at middle; a terminal series of small black lunules slightly defined on inner side by whitish. Hind wing dark brown; a broad orange medial band from costa to vein 1, its inner edge irregular, its outer angled at vein 4; a slight yellowish line before termen; cilia chequered with white to vein 2, then with whitish tips. Underside of fore wing with the basal half yellow, a yellow streak beyond the cell and some yellowish above it on costa; hind wing yellow, the veins streaked with white, a blackish discoidal spot, the costal area white irrorated with brown, the terminal area brown mixed with whitish, its inner edge waved.

Hab. W. China, Chang-yang (*Pratt*), 8 ♀ type. *Exp.* 50 millim.

Genus **ELÆODES**, nov.

Type. *E. brevicornis.*

Proboscis aborted, small; palpi obliquely upturned, the 2nd joint hardly reaching to middle of frons and moderately fringed with hair, the 3rd short, porrect; frons smooth, with tuft of hair; eyes large, round; antennæ of male typically serrate and fasciculate; thorax clothed with hair and hair-like scales and without crests; tibiæ fringed with long hair; abdomen with dorsal series of hairy crests. Fore wing with the apex rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anatomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from well above angle; 6, 7 from upper angle; 8 anatomosing with the cell near base only.

Sect. I. Antennæ of male with short fasciculate branches.

A. Fore wing yellow tinged with green; hind wing of male white ..... *virescens.*

B. Fore wing brownish grey suffused in parts with olive-green; hind wing greyish tinged with fuscous brown ..... *acatharta.*

8168. Elæodes virescens.

Eremobia virescens, Butl. A. M. N. H. (5) iv. p. 243 (1879), ♂.
Euplexia ochroargyra, Mab. Ann. Soc. Ent. Fr. 1899, p. 727, ♀.

♂. Head and thorax greenish yellow mixed with red-brown; tegulæ with a reddish brown band near tips, the patagia reddish brown at extremities, the metathorax with reddish brown band; abdomen ochreous, the crests tipped with reddish brown. Fore wing yellow tinged with green; subbasal line silvery white defined at sides by red-brown, waved, from costa to submedian fold, some red-brown beyond it on costa and above vein 1; antemedial line silvery white defined at sides by red-brown, angled outwards below costa, then oblique to submedian fold and angled inwards at vein 1, a red-brown streak from it to postmedial line in submedian fold; orbicular a small round silvery white annulus with red-brown centre; reniform a minute silvery white lunule on a red-brown patch which extends to the orbicular; postmedial line silvery white defined on each side by red-brown forming two small spots

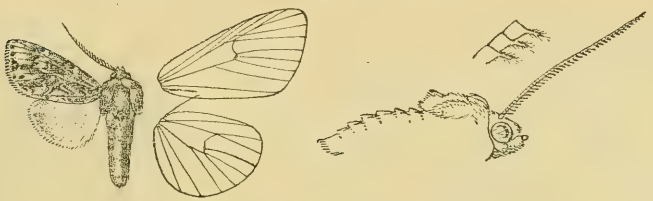


Fig. 92.—*Elæodes virescens*, ♂. ½.

at costa, a patch on its outer side above and below vein 6 and patches on each side of it between veins 4 and 2, oblique and sinuous to discal fold, then incurved and waved; subterminal line formed by silvery white lunules defined on outer side by red-brown marks and on inner side also below costa and veins 3 and 2, incurved at vein 5 and bent inwards at vein 2; cilia chequered red-brown and white. Hind wing white tinged with red-brown; the underside with brown discoidal lunule and postmedial reddish bar from costa.

♀. Hind wing uniform dark brown.

Hab. Madagascar, Antanararivo (*Kingdon*), 1 ♂ type, Betsileo (*Cowan*), 1 ♂. *Exp.* 36 millim. Type † ♀ *ochroargyra* in Coll. Mabille.

8169. Elæodes acatharta, n. sp. (Plate CCXXXIV. fig. 1.)

♂. Head and thorax pale dull olive-green mixed with grey and brownish; antennæ fuscous brown; palpi blackish above; tarsi banded with black; abdomen brownish grey. Fore wing pale

brownish grey suffused in parts with dull olive-green; some fuscous brown at base of cell; subbasal line represented by oblique pale striæ from costa and cell defined by fuscous brown, a patch of fuscous brown below submedian fold in which there is a diffused streak connecting it with the antemedial line, which is indistinctly double, fuscous brown, waved, connected by a diffused streak below submedian fold with the postmedial line; orbicular with fuscous brown centre and pale annulus, a fuscous brown patch between it and the reniform, which is represented by a pale bar defined on outer side by fuscous brown; postmedial line pale defined on each side by fuscous brown scales, dentate, oblique to vein 5, then inwardly oblique and incurved in submedian interspace, a fuscous brown patch beyond it above vein 6 and a patch before and beyond it between veins 4 and 2, the costa beyond it with alternating pale and dark marks; subterminal line pale defined on each side by fuscous brown scales and with a fuscous brown patch beyond it between veins 6 and 4, dentate; cilia chequered fuscous brown and whitish. Hind wing greyish tinged with fuscous brown; a fuscous discoidal spot and postmedial line excurved to vein 4, then incurved.

♀. Hind wing fuscous, the cilia with a fuscous line through them.

Hab. Natal, Durban (*Quekett, Bell-Marley*), 1 ♂, 3 ♀ type. *Exp.* ♂ 38, ♀ 42–46 millim.

Larva. Dorsal surface purple-red; ventral surface white tinged with purple-red; each somite with a dorsal black band with two creamy white spots on it, the anterior rounded, the posterior hooked and with a white patch behind it; lateral line white with the black stigmata on it, each with a black-brown spot behind it except on 10th somite; warts with a few long white hairs; head ochreous, the jaws on a black patch, the lower part of hemispheres with black patches, the hairs white.

Pupa. Semihyaline, the head, wing cases, and legs defined by chocolate-brown lines, abdominal segments with chocolate-brown bands; stigmata chocolate-brown.

Sect. II. Antennæ of male serrate and fasciculate.

A. Fore wing without white patches beyond the cell and at middle of submedian interspace ..... *brevicornis.*
B. Fore wing with white patches beyond the cell and at middle of submedian interspace ..... *lutescens.*

8170. Elæodes brevicornis.

Xanthia brevicornis, Wlk. x. 466 (1856).
Mamestra tarara, Holl. Psyche, vi. p. 566 (1893).

♂. Head and thorax olive-green mixed with ochreous; antennæ brownish; abdomen ochreous, the crests olive-green. Fore wing ochreous suffused with olive-green; a brown patch at base of costa; subbasal line represented by curved whitish striæ from costa

and cell defined on each side by olive-green and with brown patches beyond them below submedian fold and above inner margin; antemedial line silvery whitish defined on each side by brown, waved, interrupted; a brown patch at middle of inner area; orbicular with brown centre and silvery whitish annulus, a brown patch between it and the reniform, which is represented by a silvery whitish bar defined on outer side by brown; postmedial line silvery whitish defined on each side by some brown scales, minutely dentate, oblique to vein 5, then inwardly oblique, patches of dark brown

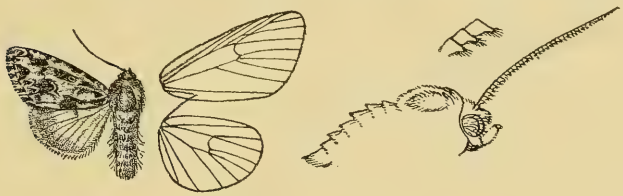


Fig. 93.—*Elæodes brevicornis*, ♂. ½.

suffusion beyond it above vein 6 and between veins 4 and 2, some whitish points beyond it on costa; subterminal line silvery whitish defined on outer side by some dark brown suffusion, dentate, incurved at discal fold and bent inwards at vein 2; cilia chequered dark brown and whitish. Hind wing white, the terminal area tinged with reddish brown; a small dark discoidal spot; cilia chequered reddish brown and whitish; the underside white with slight brownish discoidal spot and faint sinuous postmedial and subterminal lines.

♀. Abdomen and hind wing fuscous brown; underside of hind wing whitish suffused with fuscous brown except on terminal area, the discoidal spot and lines more distinct.

Hab. S. Nigeria, Lagos (*Boag*), 1 ♀, Old Calabar (*Crompton*, *Sampson*), 2 ♂, 1 ♀, Ilesha (*Humfrey*), 4 ♂, 2 ♀; Gaboon, Ogové R. (*Good*), 1 ♀ co-type *tarara*; Congo (*Curror*), 1 ♂ type; N. Angola, Kibokolo do Zombo (*Lewis*), 1 ♂; Uganda, Toro, Mpanga Forest (*Neave*), 1 ♀. *Exp.* ♂ 28–36, ♀ 34–44 millim.

8171. Elæodes lutescens. (Plate CCXXXIV. fig. 2.)

Noctua lutescens, Herr.-Schäff. Aussereur. Schmett. f. 127 (1850).

♀. Head and thorax olive-yellow; palpi blackish; antennæ blackish towards tips; frons and back of head brownish white; tegulæ and patagia edged with brownish white, the thoracic crests tipped with brownish white; pectus and femora brownish white, the tarsi banded black and whitish; abdomen brownish white.

Fore wing olive-yellow tinged in parts with olive-brown; some whitish at base and a whitish subbasal spot in the cell; antemedial line white, rather diffused towards costa, oblique and waved to submedian fold, incurved at vein 1; a medial white patch in submedian interspace; orbicular and reniform with olive-brown centres, the former with white annulus, the latter defined on inner side by white and on outer by a white patch tinged with yellow at discal fold; postmedial line white, interrupted between veins 4 and 2 except for a minute white streak on vein 3, oblique and sinuous to vein 5, then inwardly oblique and angled inwards at submedian fold; subterminal line represented by a series of white spots in the interspaces, the spots above vein 6 and between veins 4 and 2 connected with the terminal series of white striæ and with small yellow lunules on them, the mark below vein 6 oblique and the spot below vein 5 further from termen, two obliquely placed spots in submedian interspace; cilia chequered olive-brown and white. Hind wing pale purplish brown with a curved dark medial shade, the terminal area whitish; a fine brownish terminal line; cilia chequered brownish and white; the underside white irrorated with brown, the terminal area slightly irrorated, a curved brown postmedial shade.

Hab. Cape Colony (*Dohrn*), 1 ♀. *Exp.* 52 millim.

Genus CALOCASIA.

	Type.
Calocasia, Ochs. Schmett. Eur. iv. p. 63 (1816), non descr.; Hübn. Verz. p. 201 (1827)	*coryli.*
Demas, Steph. Ill. Brit. Ent., Haust. ii. p. 59 (1829)	*coryli.*

Proboscis aborted, minute; palpi porrect, extending to just beyond the frons and fringed with long hair; frons smooth; eyes large, round; antennæ of male bipectinate with rather long branches to apex; thorax clothed with rough hair and hair-like scales and without distinct crests; tibiæ fringed with long hair, the tarsal joints fringed with hair; abdomen with dorsal series of crests and lateral fringes of hair. Fore wing with the apex rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 7, 8 stalked, 10 from 7, 8 giving off 9 to anastomose with 7, 8 to form a minute areole, or abnormally 7, 8, 9, 10 stalked; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from well above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing nearly uniformly suffused with red-brown... *umbrosa.*
B. Fore wing with the basal half suffused with red-brown, the terminal half grey ..... *coryli.*
C. Fore wing with the basal half of inner area dark.
  a. Fore wing white irrorated with red-brown ..... *flavicornis.*
  b. Fore wing blue-grey irrorated with black ..... *electa.*
D. Fore wing nearly uniformly grey, the basal area not darker.
  a. Fore wing with the postmedial line strongly incurved below the cell.
    a^1. Fore wing white irrorated with brown ..... *propinquilinea.*
    b^1. Fore wing fuscous grey ..... *infanta.*
  b. Fore wing with the potsmedial line slightly incurved below the cell ..... *mus.*

*8172. Calocasia umbrosa.

Demas umbrosa, Wileman, Trans. Ent. Soc. 1911, p. 243, pl. 30. f. 11.

♂. Head, thorax, and abdomen white mixed with reddish brown; tarsi ringed black and white; abdomen with the dorsal crests black at tips. Fore wing reddish brown irrorated with white; antemedial line black, sinuous; orbicular small, defined by black except above, a blackish spot above it on costa; reniform whitish defined by brown and with a curved brown striga in centre, a whitish patch beyond it extending to costa; postmedial line black defined on outer side by white, minutely dentate, excurved to vein 5, then incurved and angled outwards at submedian fold; an indistinct waved brown subterminal line defined on outer side by slight white marks. Hind wing reddish brown; the underside irrorated with white and with an indistinct curved waved postmedial brown line.

Hab. JAPAN, type † ♂ in Coll. Wileman. *Exp.* 32 millim.

8173. Calocasia coryli.

Bombyx coryli, Linn. Syst. Nat. ed. x. p. 503 (1858); Esp. Schmett. iii. pl. 50. ff. 1–5; Hübn. Eur. Schmett., Noct. ff. 17, 18; Dup. Lép. Fr. vi. p. 180, pl. 84. f. 6; Frr. Neue Beitr. pl. 549; Donovan, Nat. Hist. Brit. Ins. ix. p. 45, pl. 309; Steph. Ill. Brit. Ent., Haust. ii. pl. 60. f. 1; Staud. Cat. Lep. pal. p. 131.

Demas melanotica, Haverkampf, Ann. Soc. Ent. Belg. l. p. 158 (1906).

Demas weymeri, Hold. Intern. Ent. Zeit. iii. p. 240 (1910).

Head and thorax grey mixed with brown, the metathorax red-brown, the patagia with two oblique black bars and red-brown tips;

Fig. 94.—*Calocasia coryli*, ♂. ½.

antennæ rufous; palpi and a band across frons black-brown; pectus black-brown in front; tarsi brown with pale rings; abdomen

reddish brown, the crests darker, the ventral surface grey. Fore wing grey irrorated with red-brown, the basal half strongly suffused with red-brown, the terminal area tinged with red-brown; some blackish irroration below the cell before the blackish antemedial line, which is angled outwards below the costa and at submedian fold and inwards at median nervure and vein 1, connected by fine blackish streaks above and below submedian fold with the rather diffused blackish brown medial line which is incurved at submedian fold; orbicular a small round black annulus with some blackish in centre; reniform a very narrow lunule defined by black, strongly on inner side; postmedial line blackish, excurved, slightly sinuous and red-brown from below costa to vein 4, then incurved, some minute dark streaks beyond it on costa; subterminal line whitish defined on inner side by red-brown, slightly waved, angled outwards below veins 7 and 6 and excurved at middle; a terminal series of brown striæ faintly defined on inner side by grey; cilia red-brown intersected with whitish. Hind wing grey tinged with red-brown, the terminal area pale red-brown; a slight brown discoidal lunule and faint curved postmedial line; cilia chequered red-brown and whitish; the underside paler with reddish brown patch at middle of costa, small discoidal spot, postmedial line excurved beyond the cell, curved subterminal line and fine dark terminal line.

Ab. 1. *melanotica*. Uniform fuscous black.

Hab. Britain, Leech Coll.; France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland, Frey Coll.; N. Italy; S. Russia, Sarepta, Leech Coll.; Armenia; Asia Minor, Pontus. *Exp.* 28–40 millim.

Larva. Meyr. Brit. Lep. p. 173; Barrett, Lep. Brit. ii. p. 324, pl. 82. ff. 2 *a–d*.

Greyish or pinkish ochreous, the hairs pale grey; dorsal line sometimes black; spiracular line sometimes pale; tufts of hair on 4th and 5th somites brown or reddish; hair-pencils on 1st and 11th somites black or brown; head sometimes black. Food-plants: Beech, Hazel, etc. 7–9.

8174. Calocasia flavicornis. (Plate CCXXXIV. fig. 3.)

Demas flavicornis, Smith, Bull. Brooklyn Ent. Soc. vii. p. 3 (1884); id. Cat. Lep. N. Am. p. 32.

♀. Head and tegulæ white slightly mixed with brown, the thorax white strongly mixed with brown; patagia with three oblique brown bars; pectus and legs white with a slight ochreous tinge, the tibiæ and tarsi ringed with brown; abdomen white strongly mixed with red-brown, the ventral surface ochreous white. Fore wing white slightly irrorated with red-brown, the terminal area tinged with pale red-brown, the area below submedian fold from near base to the postmedial line tinged with red-brown and irrorated with rough black scales; subbasal line brownish, oblique, from costa to submedian fold; antemedial line brownish, incurved

at median nervure and vein 1 and excurved below costa, at submedian fold and above inner margin; orbicular small, round, defined by rough black scales; a slight blackish discoidal bar; postmedial line brownish defined on outer side by white, waved, slightly excurved from below costa to vein 4, then incurved to near origin of vein 2 and excurved above inner margin; subterminal line white defined on inner side by brown, oblique to vein 7, then slightly waved; a brownish terminal line. Hind wing white faintly tinged with red-brown and with a slight red-brown terminal line; the underside white slightly irrorated with red-brown, a minute discoidal spot and diffused postmedial line from costa to vein 2.

Hab. U.S.A., New York, 1 ♀, New Jersey. *Exp.* 42 millim.

*8175. Calocasia electa.

Demas electa, Smith, J. N.Y. Ent. Soc. xix. p. 134 (1911).

♀. Head whitish; tegulæ grey; thorax banded black and white; abdomen fuscous. Fore wing blue-grey irrorated with blackish, the postmedial area paler, the inner half from base to the postmedial line darker; subbasal black striæ from costa and cell and a black streak below base of cell; antemedial line black, angled outwards below costa and in submedian fold where it is connected with the postmedial line by a black streak, angled inwards on median nervure and vein 1 and excurved above inner margin; orbicular small, round, whitish with a black point in centre; reniform whitish with a black lunule in centre, ill-defined, narrow, oblong; postmedial line black, dentate, excurved from below costa to vein 4, then strongly incurved, and excurved above inner margin; subterminal line whitish defined on inner side by fuscous, dentate, angled outwards below vein 7; a blackish terminal line. Hind wing semihyaline blackish; a black terminal line; cilia chequered white and black; the underside paler with traces of a small discoidal lunule and diffused postmedial and subterminal lines.

Hab. Canada, Manitoba, Winnipeg (*Wallis*). *Exp.* 38–40 millim. This species is unknown to me.

8176. Calocasia propinquilinea. (Plate CCXXXIV. fig. 4.)

Charadra propinquilinea, Grote, Trans. Am. Ent. Soc. iv. p. 293 (1873); Smith, Cat. Noct. N. Am. p. 32.

♀. Head and thorax white slightly mixed with brown; patagia with brown bars at middle and near tips; meso- and metathorax with paired oblique brown bars; mid and hind tibiæ banded with blackish, the tarsi banded with black; abdomen red-brown with blackish dorsal segmental bands. Fore wing white irrorated with brown; minute brown subbasal spots in and below the cell; antemedial line dark brown, waved; orbicular defined by brown and

with some brown in centre, round; reniform defined by dark brown on inner side and slightly on outer, a minute brown spot in centre; medial line brown, oblique, sinuous, rather diffused, confluent with the antemedial line in submedian interspace; postmedial line brown, bent outwards below costa, almost obsolete to vein 4, then strongly incurved to near origin of vein 2, on which it is slightly dentate, and to near the medial line; subterminal line brownish defined on outer side by white, incurved below the costa, excurved below vein 7 and at middle, a terminal series of brown striæ defined on inner side by white, the striga below vein 2 oblique; cilia obscurely chequered brown and white. Hind wing white tinged with brown, the terminal area suffused with brown, the termen with white striæ; cilia white, mixed with brown at base; the underside white, the veins, costal and terminal areas slightly irrorated with brown, obscure oblique diffused brownish postmedial and subterminal shades.

Hab. U.S.A., Maine, Massachusetts, New York, Rhode I., 1 ♀ type. *Exp.* 44 millim.

*8177. Calocasia infanta.

Demas infanta, Smith, J. N.Y. Ent. Soc. xix. p. 133 (1911).

Head, thorax, and abdomen dark fuscous grey, the head, tegulæ, and pectus whiter; antennæ yellowish; patagia with three black bars. Fore wing fuscous grey, the base with some white; antemedial line blackish defined on inner side by whitish scales, angled outwards below costa and cell and inwards on median nervure and vein 1, excurved above inner margin; orbicular minute, whitish, round; reniform whitish with a fuscous striga in centre, narrow; postmedial line blackish defined on outer side by white scales, dentate, excurved from below costa to vein 4, then strongly incurved and again excurved above inner margin; subterminal line whitish defined on inner side by fuscous, dentate, angled outwards below vein 7; terminal line fuscous defined on inner side by whitish lunules. Hind wing fuscous brown; the underside fuscous irrorated with white.

Hab. U.S.A., Pennsylvania, New Brighton, Tennessee, Johnson City. *Exp.* 38–42 millim. This species is unknown to me.

*8178. Calocasia mus.

Diloba mus, Oberth. Ét. Ent. x. p. 17, pl. 2. f. 4 (1884); Seitz, Gross-Schmett. pal. iii. pl. 2; Staud. Cat. Lep. pal. p. 131.

♂. Head and thorax brownish grey, the patagia with two dark bars; abdomen brownish grey. Fore wing brownish grey; antemedial line dark, angled outwards below costa, then oblique, angled outwards at submedian fold and to inner margin, connected by a slight dark streak in submedian fold with the postmedial line; orbicular and reniform white defined by black, small, the former

round, the latter very narrow with some whitish beyond it; post-medial line dark defined on outer side by whitish, oblique to vein 6, then waved, incurved below vein 4 and excurved at vein 1; subterminal line very indistinct, whitish defined on inner side by brown, excurved below vein 7 and at middle. Hind wing rather browner grey. Underside of fore wing with whitish discoidal lunule.

Hab. E. Siberia, Amurland, Ussuri, Sidemi. *Exp.* 40 millim. This species is unknown to me.

Genus **DIPHTHERA.**

	Type.
Diphtera, Ochs. Schmett. iv. p. 63 (1816) non descr.	*cœnobita.*
Diphthera, Treit. Schmett. Eur. v. (1) p. 47 (1825).....	*cœnobita.*
Panthea, Hübn. Verz. p. 202 (1827)	*cœnobita.*
Audela, Wlk. Can. Nat. & Geol. vi. p. 37 (1861).....	*acronyctoides.*
Platycerura, Pack. Proc. Ent. Soc. Phil. iii. p. 374 (1864)...	*furcilla.*

Proboscis aborted, minute; palpi porrect, extending to just beyond the frons and clothed with rather long hair; frons smooth; eyes large, round; antennæ of male bipectinate with moderate branches to apex; thorax clothed with hair and hair-like scales and without crests; tibiæ moderately fringed with hair; abdomen with dorsal series of small hairy crests and lateral tufts of hair. Fore wing with the apex rounded, the termen evenly curved and not crenulate; vein 3 from before angle of cell; 5 from just above angle; 6 from upper angle; 9 from 10 anastomosing with 8 to form a long narrow areole; 11 from cell. Hind wing with the cell half the length of wing; vein 3 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the subterminal line dentate.
  a. Fore wing with the inner half of medial area almost entirely black, a broad black shade before subterminal line .... *cœnobita.*
  b. Fore wing with the inner half of medial area not black, the black or brown shade before subterminal line narrow.
    a^1. Fore wing with the medial line angled outwards at median nervure.
      a^2. Fore wing with the postmedial line very strongly incurved below vein 4 .... *acronyctoides.*
      b^2. Fore wing with the postmedial line slightly incurved below vein 4 .... *grisea.*
    b^1. Fore wing with the medial line not angled outwards at median nervure.
      a^2. Fore wing with the subterminal line prominent and white.
        a^3. Fore wing with the antemedial line nearly straight ..... *furcilla.*
        b^3. Fore wing with the antemedial line strongly sinuous ..... *portlandia.*
      b^2. Fore wing with the whitish subterminal line slight and diffused.
        a^3. Fore wing with the medial line confluent with the reniform ..... *gigantea.*
        b^3. Fore wing with the medial line well separated from the reniform ..... *virginaria.*
B. Fore wing with the subterminal line not dentate ..... *palata.*

8179. Diphthera cœnobita.

Bombyx cœnobita, Esp. Schmett. iii. p. 196, pl. 37. f. 7 & pl. 82. f. 2 (1785); Hübn. Eur. Schmett., Bomb. ff. 72, 73 & Noct. f. 508; Dup. Lép. Fr. vii. pl. 116. f. 4; Frey, Beitr. pl. 17; Staud. Cat. Lep. pal. p. 130.

Head and thorax ochreous white; antennæ black with the branches brown; palpi and sides of frons black; tegulæ black at base and with black dorsal streak; patagia with black patches at base, middle, and tips; pro-, meso-, and metathorax with large paired black spots; pectus brownish white, blackish in front; tibiæ and tarsi banded with black; abdomen black, the anal tuft and ventral surface white, lateral and sublateral series of black spots. Fore wing creamy white; a small black spot below base of cell; two subbasal black-brown marks on costa, a patch below the cell and spot above inner margin; a small round black spot in middle of cell; reniform white defined by black except above and with white spot before it on the black-brown medial band which is

Fig. 95.—*Diphthera cœnobita*, ♂. ½.

waved to lower angle of cell, then the whole medial area black-brown; postmedial line black-brown, dentate, incurved at discal fold and below vein 4, defined on inner side by some whitish on the dark medial area; a black-brown subterminal band with dentate edges, strong towards costa, at middle, and towards inner margin, somewhat incurved at discal fold and below vein 3; some dentate black-brown marks before termen with a large patch between veins 6 and 4; a terminal series of black-brown bars; cilia chequered black-brown and white. Hind wing whitish suffused with brown, the interspaces rather paler; traces of a diffused sinuous dark subterminal band ending on termen at vein 1; a dark terminal line; cilia chequered brown and white; the underside white, an antemedial black-brown band from costa to median nervure, a postmedial band with waved edges, incurved at discal fold and below vein 3, a bar from costa before apex and oblique bar from vein 2 to termen at vein 1; the veins of terminal area with dark streaks.

Hab. Germany, Zeller, Frey, and Leech Colls.; Austria, Leech Coll.; Hungary; N. Italy, Zeller Coll.; Balkan States;

Russia, St. Petersburg (*Sievers*); Japan, Tsu-shima (*Holst*), 1 ♂. *Exp.* 38–56 millim.

Larva. Kirby, Butt. & Moths Eur. p. 155; Hffm. Raup. p. 78, pl. 22. f. 13.

Hairy with tufts of hair on 4th and 11th somites; brownish grey, the incisures blue, dorsal line whitish intersected by transverse whitish lines on dorsal surface; lateral stripe reddish yellow. Food-plants, *Pinus* and other trees. 8–9.

8180. **Diphthera acronyctoides.** (Plate CCXXXIV. fig. 5.)

Audela acronyctoides, Wlk. Can. Nat. & Geol. vi. p. 37 (1861); Smith, Cat. Noct. N. Am. p. 31.
Panthea leucomelana, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 428.

Head white, the antennæ and vertex brown; palpi and sides of frons black; thorax white mixed with brown, the tegulæ brown except at tips, the patagia with oblique black bars at middle and tips, the pro- and metathorax with blackish patches; tibiæ and tarsi banded black and white; abdomen ochreous white with diffused brown segmental bands. Fore wing creamy white irrorated with a few brown scales; a black-brown subbasal line from costa to vein 1; a strong waved black-brown antemedial line; a small spot in middle of cell conjoined to the strong waved black-brown medial line, incurved at submedian fold; reniform small, defined by black-brown; postmedial line black-brown, sinuous, angled outwards at veins 5, 4, 3, then incurved to near the medial line and excurved below submedian fold; subterminal line black-brown, strong and oblique from costa to discal fold, its outer edge angled below vein 7, angled outwards at veins 4, 3, then incurved and waved; some brown suffusion before termen from apex to vein 4 and a terminal series of brown spots. Hind wing white tinged with brown; a diffused oblique antemedial brown line; a brown discoidal spot; postmedial line indistinct, brownish, waved, excurved beyond lower angle of cell; a subterminal brown band incurved below vein 3 and ending on termen at vein 1; a terminal series of small brown spots; the underside whiter with the markings much more distinct.

Hab. Canada, Quebec, Rouge R., Ontario, Orono, 1 ♀; U.S.A., Maine, Massachusetts, New York, Buffalo, 1 ♂, Wisconsin. *Exp.* 38 millim.

*8181. **Diphthera grisea.** (Plate CCXXXIV. fig. 6.)

Panthea grisea, Wileman, Entom. 1910, p. 345.

♂. Head, thorax, and abdomen grey-white mixed with black; antennæ brown; palpi, lower part and sides of frons black; a black line behind the tegulæ; patagia with two oblique black bars towards tips; metathorax with a black bar; pectus and legs grey-white,

the tibiæ and tarsi banded with black. Fore wing grey-white thickly irrorated with fuscous; a subbasal black bar from costa; antemedial line, black, oblique, waved, connected by a short streak in submedian fold with the black medial line which is obliquely incurved from costa to lower angle of cell, then incurved and dentate; a minute black spot in middle of cell; reniform small, defined by black; postmedial line black defined on outer side by white, dentate, incurved below vein 4; subterminal line black defined on outer side by white, waved, incurved at vein 5 and below vein 3; a fine terminal black line; cilia chequered white and black. Hind wing white suffused with fuscous brown, the veins darker; a slightly sinuous white postmedial band; a terminal series of brown striæ defined on inner side by white; cilia chequered white and brown; the underside white, the costal and terminal areas irrorated with brown, a black discoidal spot and narrow sinuous medial, postmedial, and subterminal bands.

Hab. Formosa, Rantaizan, type † ♂ in Coll. Wileman. *Exp.* 46 millim.

8182. **Diphthera furcilla.** (Plate CCXXXIV. fig. 7.)

Platycerura furcilla, Pack. Proc. Ent. Soc. Phil. iii. p. 374 (1864); Stretch, Zyg. & Bomb. p. 230, pl. 9. f. 15; Smith, Cat. Noct. N. Am. p. 31.

♂. Head and thorax white mixed with reddish brown; abdomen white with diffused red-brown bands. Fore wing white irrorated with brown, the postmedial and terminal areas suffused with brown; small black-brown subbasal spots on costa and below the cell; a strong erect and almost straight black-brown antemedial line and similar medial line; a slight brown discoidal lunule; postmedial line black-brown, closely approximated to the cell and slightly angled outwards beyond lower angle, then bent inwards to the medial line at submedian fold, then oblique to inner margin; subterminal line rather diffused, white, angled outwards below vein 7 and at vein 4, incurved at discal fold and below vein 3; cilia chequered brown and white. Hind wing white tinged in parts with red-brown and with diffused sinuous reddish brown medial and subterminal bands; the underside with dark brown antemedial and medial bars from costa.

Hab. Canada, Renfrew Co., 1 ♂; U.S.A., Eastern and Middle States, New York, Evans Center (*Grote*), 1 ♂, Minnesota. *Exp.* 44–46 millim.

Larva. Lintner, N.Y. State Cabinet Ann. Rep. xxvi. p. 131, f. 7.

Head red, the frons with paler *x*-shaped mark and slight reticulations; body dull red, each somite with an irregular bright red band; dorsal line whitish on a grey stripe; a distinct lateral grey stripe, with four depressed black spots arranged in a quadrangle on each somite from the 3rd to the 8th; substigmatal fold white in front and red behind on each somite; the tubercles with bunches of red hair of unequal length, somewhat yellowish on the anterior

somites; the 1st, 2nd, 4th, and 11th somites with pencils of red hair darker at tips and slightly feathered; stigmata defined by brown; legs red. Food-plant, *Pinus*. 8–9.

8183. **Diphthera portlandia.** (Plate CCXXXIV. fig. 8.)

Panthea portlandia, Grote, Mitth. Roem. Mus. Hild. iii. p. 14 (1896); Dyar, Cat. Lep. N. Am. p. 98.

♂. Head and thorax white mixed with brown; antennæ brown; palpi brown with some white in front; sides of frons brown; patagia with two obscure brown bars; the pro- and metathorax with diffused brown bands; tibiæ and tarsi banded with brown; abdomen reddish brown with white segmental lines, the ventral surface whitish. Fore wing white irrorated with brown; subbasal black-brown bars from costa and cell; antemedial line strong, black-brown, sinuous; a slight dark streak in middle of cell before the strong black-brown medial line, which is oblique and slightly sinuous to the submedian fold, then excurved; a small black-brown discoidal lunule; postmedial line black-brown defined on outer side by white, oblique, angled outwards at vein 6, excurved at middle, then incurved and angled outwards at vein 1; subterminal line black-brown defined on outer side by white, angled outwards below veins 7 and 6 and at veins 4 and 3, angled inwards above and below veins 5 and 2; cilia chequered black-brown and white. Hind wing white, the basal half tinged with brown, the veins streaked with brown; a diffused sinuous brown subterminal band ending at tornus; a black-brown terminal line; cilia chequered brown and white; the underside with brown bar from middle of costa and sinuous postmedial line.

♀. The markings rather blacker and better defined.

Hab. Canada, Vancouver I. (*Danby*), 1 ♂, 3 ♀; U.S.A., Pacific States. *Exp.* 50–54 millim.

8184. **Diphthera gigantea.** (Plate CCXXXIV. fig. 9.)

Platycerura gigantea, French, Can. Ent. xxii. p. 134 (1890); Smith, Cat. Noct. N. Am. p. 31.

♀. Head and thorax white mixed with dark brown; palpi dark brown at sides; patagia dark brown at tips; tarsi ringed with dark brown; abdomen white irrorated with dark brown and with narrow dark brown segmental bands. Fore wing white thickly irrorated with dark brown; subbasal line dark brown, from costa to submedian fold; antemedial line dark brown, excurved to submedian fold, then incurved; a diffused almost straight dark brown medial line; postmedial line dark brown, slightly sinuous to vein 3, then incurved, excurved at vein 1; subterminal line white defined on inner side by rather diffused dark brown, dentate, angled outwards below vein 7 and excurved at middle; cilia chequered dark

brown and white. Hind wing white tinged with pale brown, the veins browner; an indistinct subterminal brown shade excurved below costa and ending at tornus; a fine brown terminal line; cilia chequered brown and white; the underside whiter, a brown discoidal spot, indistinct oblique ante- and postmedial brown lines, the subterminal shade more distinct.

Hab. U.S.A., Texas, Colorado (*Bruce*), 1 ♀. *Exp.* 50 millim.

8185. **Diphthera virginaria.** (Plate CCXXXIV. fig. 10.)

Biston virginaria, Grote, Can. Ent. xii. p. 220 (1880); Dyar, Cat. Lep. N. Am. p. 328.

♀. Head and thorax white mixed with dark brown; abdomen red-brown irrorated with white, the ventral surface dark brown mixed with white. Fore wing white thickly irrorated with dark brown, the veins streaked with dark brown; subbasal line dark brown, from costa to submedian fold; antemedial line dark brown, excurved to submedian fold, then incurved; medial line dark brown, nearly straight to submedian fold, then excurved; a slight dark discoidal lunule; postmedial line dark brown, excurved and slightly waved at middle, incurved at discal fold and below vein 3 and excurved at vein 1; subterminal line dark brown defined on outer side by whitish marks, angled outwards below vein 7 and inwards at vein 5, excurved at middle, then incurved; a fine dark terminal line; cilia chequered brown and white. Hind wing white tinged with brown, the veins browner; a brown subterminal shade ending at tornus and almost interrupted between veins 3 and 2; a fine dark terminal line; cilia chequered brown and white; the underside white irrorated with brown, a brown discoidal spot, oblique brownish ante- and postmedial lines, the subterminal shade obsolescent.

Hab. U.S.A., California, Shasta Soda Spring, 1 ♀ type. *Exp.* 56 millim.

8186. **Diphthera palata.** (Plate CCXXXIV. fig. 11.)

Charadra palata, Grote, Can. Ent. xii. p. 258 (1880); Smith, Cat. Noct. N. Am. p. 31.

♂. Head and thorax white mixed with dark brown; patagia with black bands at and near tips; abdomen dark brown with narrow whitish bands, the ventral surface whitish. Fore wing white thickly irrorated with dark brown; subbasal line black, oblique, from below costa to submedian fold; antemedial line black, slightly bent inwards to costa, oblique below submedian fold and forking above inner margin, a black streak in submedian fold from it to the postmedial line; orbicular and reniform defined by black and with some dark suffusion between them, the former round, the latter somewhat quadrangular; an oblique sinuous

blackish line from lower angle of cell to inner margin; postmedial line blackish slightly defined on outer side by whitish, slightly bent outwards below costa, incurved below vein 4 and excurved below submedian fold; postmedial line blackish defined on outer side by white, excurved below vein 7 and at middle and incurved at discal fold; the veins of terminal half with slight dark streaks; a fine blackish terminal line. Hind wing white; a few brown scales at the extremity of vein 1; cilia slightly intersected with brown from apex to vein 2; the underside with the costal area slightly irrorated with brown.

Hab. U.S.A., Colorado, 1 ♂ type, Arizona. *Exp.* 44 millim.

Genus **CHARADRA**.

Type.

Charadra, Wlk. xxxii. 445 (1865) ..... *deridens*.

Proboscis fully developed; palpi obliquely upturned, short, fringed with rather long hair; frons smooth; eyes large, round; antennæ of male bipectinate with rather long branches to apex, of female with short branches; thorax clothed with hair and hair-like scales, the metathorax with spreading crest; tibiæ moderately fringed with hair; abdomen with dorsal series of crests, the crests on medial segments large. Fore wing with the apex rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from well above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Hind wing yellow ..... *pata*.
B. Hind wing whitish or brown.
  a. Fore wing with dark streak in submedian fold between the antemedial and medial lines.
    a^1. Fore wing with the costal half of medial area suffused with black-brown ..... *nitens*.
    b^1. Fore wing with the costal half of medial area not suffused with black-brown.
      a^2. Fore wing with blackish spot in centre of orbicular.
        a^3. Fore wing with the ground-colour blue-grey ..... *ingenua*.
        a^3. Fore wing with the ground-colour white ..... *deridens*.
      b^2. Fore wing without blackish spot in centre of orbicular, the lines finer ..... *sudena*.
  b. Fore wing without dark streak in submedian fold between the antemedial and medial lines.
    a^1. Fore wing with triangular blackish brown patch on costal half of medial area; hind wing and underside dark brown ..... *nigracreta*.
    b^1. Fore wing without triangular blackish brown patch on costal half of medial area; hind wing and underside whitish ..... *dispulsa*.

8187. **Charadra pata**. (Plate CCXXXIV. fig. 12.)

Trisulodes pata, Druce, A. M. N. H (6) xiii. p. 362 (1894); id. Biol. Centr.-Am., Het. ii. p. 509, pl. 96. f. 21.

♂. Head and thorax grey mixed with black-brown; antennæ red-brown; tegulæ with a red-brown tinge before tips; patagia

black at base and above and with two oblique black lines filled in with reddish brown near tips; metathorax mostly black; tarsi ringed with black-brown; abdomen grey suffused with brown and with some yellowish at sides at base. Fore wing bluish grey suffused with brown, the inner half and outer part of medial area darker; oblique subbasal black striæ from costa and cell; antemedial line black, angled outwards below costa and at submedian fold, then oblique and forking above inner margin, connected by a black streak in submedian fold with the slightly sinuous blackish medial line which is angled inwards at submedian fold; orbicular reddish brown defined by black, rather elongate; reniform a narrow red-brown lunule defined by black on inner side and by brown on outer; postmedial line blackish, almost obsolete to vein 4, then incurved and waved; subterminal line blackish slightly defined on outer side by whitish, oblique towards costa, dentate above and below vein 6, then obsolescent and slightly waved to vein 2 where it is bent inwards; the veins of terminal area slightly streaked with black, a black terminal line. Hind wing yellow, the terminal area fuscous, broadly at costa, narrowing to a point at tornus; a minute discoidal spot; cilia fuscous intersected with white; the underside with the costal and terminal areas grey irrorated with fuscous, a small blackish discoidal spot and postmedial shade ending at tornus.

♀. Fore wing with whitish patch beyond the reniform and the postmedial line defined on outer side by whitish.

Hab. U.S.A., Arizona, Cochise Co., Palmerlee, 1 ♂; GUATEMALA, Guatemala City (*Rodriguez*), 1 ♀ type, Godman-Salvin Coll. *Exp.* ♂ 42, ♀ 46 millim.

8188. **Charadra nitens.** (Plate CCXXXIV. fig. 13.)

Charadra nitens, Schaus, A. M. N. H. (8) vii. p. 49 (1911).

Head and thorax silvery white mixed with some red-brown and irrorated with black; antennæ red-brown; tegulæ with blackish medial band; patagia with two blackish bars towards tips; palpi black at sides except at tips; tarsi banded black and white; abdomen fuscous brown, the crests black at base, grey at tips, the extremity and ventral surface grey. Fore wing silvery white largely suffused with reddish brown and irrorated with black, the veins of terminal half with fine dark streaks, a diffused black-brown patch on costal half of medial area with the area beyond it white, a black-brown apical patch; subbasal black bars from costa and cell; antemedial line black with some dark suffusion before its costal half, angled outwards below costa and oblique below submedian fold where it is connected by a curved black streak with the medial line, which is blackish and somewhat oblique and sinuous; orbicular defined by blackish, round; reniform a very narrow lunule defined by blackish; postmedial line indistinctly double, blackish filled in with white, bent outwards below costa, then waved, strongly

incurved below vein 4 and excurved at vein 1, the costa beyond it with alternating black and white streaks; subterminal line black, oblique and strong to discal fold where it is bent inwards, then slight, waved, and ending on termen at submedian fold; a terminal series of slight black lunules defined on inner side by white. Hind wing pale reddish brown; a terminal series of dark striæ; cilia brown and whitish with a fine brown line through them; the underside white tinged with brown, the costal area and terminal area to vein 3 irrorated with brown, an oblique brown bar from middle of costa, discoidal striga, postmedial line excurved beyond the cell and ending at submedian fold, and terminal series of blackish lunules.

Hab. Costa Rica, Juan Vinas (*Schaus*), 2 ♂, 2 ♀. *Exp.* 40–44 millim.

*8189. **Charadra ingenua.** (Plate CCXXXIV. fig. 14.)

Charadra ingenua, Smith, J. N.Y. Ent. Soc. xiv. p. 10 (1906).

♂. Head and thorax bluish grey mixed with brown; antennæ red-brown; tegulæ with dark brown band near tips; tarsi ringed black and white; abdomen white mixed with brown, the crests blackish at base. Fore wing blue-grey thickly irrorated with brown; subbasal line represented by oblique black striæ from costa and cell; antemedial line black, angled outwards below costa and in submedian fold, where it is connected by a black streak with the medial line; orbicular defined by black and with black spot in centre, round; reniform defined by black on inner side followed by two dark striæ; medial line blackish, rather diffused, oblique to the reniform and incurved below the cell; postmedial line black, bent outwards below costa, then dentate, incurved at discal fold and below vein 4, strongly incurved just below vein 2; subterminal line whitish defined on inner side by brown, slightly waved, excurved below vein 7 and at middle; a fine black terminal line. Hind wing white tinged with brown; a blackish terminal line and slight brown patch at tornus; the underside with the costal area irrorated with brown, a small dark discoidal lunule and postmedial line excurved at middle.

Hab. U.S.A., Colorado, Glenwood Springs, Durango. *Exp.* 42 millim. This species is unknown to me, figured from a drawing from type in Coll. J. B. Smith.

8190. **Charadra deridens.**

Diphtera deridens, Guen. Noct. i. p. 35, pl. 3. f. 8 (1852); Smith, Cat. Noct. N. Am. p. 32.
Acronycta circulifera, Wlk. xi. 709 (1857).
Charadra contigua, Wlk. xxxii. 446 (1865).

Head and thorax white mixed with some brown, the tegulæ with blackish medial line, the patagia with some blackish marks near upper edge, the thorax with three pairs of small blackish spots;

antennæ red-brown ; palpi black-brown above ; frons with blackish mixed ; pectus red-brown in front ; tarsi ringed black-brown and white ; abdomen grey-white mixed with brown, the crests blackish at base. Fore wing silvery white irrorated with reddish brown ; oblique subbasal black bars from costa and cell ; antemedial line black, angled outwards below costa and in submedian fold, where it is connected by a black streak with the medial line, which is rather diffused, dark, oblique and sinuous below the cell ; orbicular round, defined by black and with some blackish in centre ; reniform with curved black line on its inner side and small lunule beyond it ; postmedial line indistinctly double, blackish, bent outwards below

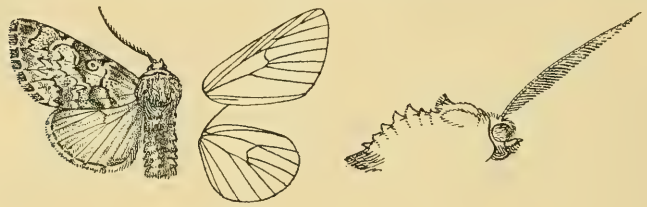


Fig. 96.—*Charadra deridens*, ♂. ½.

costa, then dentate, incurved at discal fold, strongly incurved below vein 4 and angled inwards at submedian fold ; the costa beyond it with alternating black and white marks ; subterminal line blackish, oblique to discal fold where it is bent inwards, then slighter, dentate, and with small black spot on it at submedian fold ; a faint dentate brown shade before termen ; a terminal series of strong black striæ. Hind wing white tinged with red-brown ; a terminal series of black-brown striæ and oblique brown mark at tornus ; the underside white, the costal area irrorated with brown, an oblique brown striga from middle of costa, slight discoidal lunule, and rather diffused postmedial line excurved beyond the cell and ending at tornus.

Ab. 1. Fore wing with the inner half of medial area and the postmedial area suffused with blackish.

Hab. Canada, Manitoba, Winnipeg (*Wallis*), 1 ♂ ; U.S.A., Maine, Massachusetts, New York, Evans Center (*Grote*), 1 ♂, 2 ♀, Georgia, 1 ♂ type *contigua*, Florida (*Doubleday*), 1 ♀ type *circulifera*, Texas. *Exp.* 44–52 millim.

Larva. Saunders, Can. Ent. ii. p. 145.

Head greenish white, with large black lateral patches and smaller patches below them, slightly bilobed, the mandibles black with lateral white streaks ; body pale greenish white with transverse series of tubercles of the same colour from which arise tufts of long fine silky white hairs and one or two black hairs at sides, the hair on 1st somite overhanging the head ; dorsal line pale green ; stigmata white defined by pale reddish. 10.

*8191. Charadra sudena.

Charadra sudena, Smith, J. N.Y. Ent. Soc. xvi. p. 80 (1908).

Similar to *C. deridens* but smaller. Fore wing with the lines less strong and without the black centre to the orbicular, the streak connecting the antemedial and medial lines slight and brown or almost obsolete, the subterminal line less irregular.

Hab. U.S.A., Florida, Miami. *Exp.* 34–36 millim. This species is unknown to me.

8192. Charadra nigracreta. (Plate CCXXXIV. fig. 15.)

Charadra nigracreta, H. Edw. Papilio, iv. p. 17 (1884); Druce, Biol. Centr.-Am., Het. ii. p. 472.

Colocasia rhotana, Druce, A. M. N. H. (6) xiii. p. 354 (1894); id. Biol. Centr.-Am., Het. ii. p. 461, pl. 91. f. 14.

Head and thorax white irrorated with dark brown, the dorsum of thorax suffused with dark brown; a blackish line at tips of tegulæ and bar near tips of patagia; antennæ rufous; palpi black-brown; frons black-brown at sides; tarsi banded black-brown and white; abdomen very dark reddish brown, the anal tuft and ventral surface whitish. Fore wing silvery white irrorated with brown, the veins of terminal half finely streaked with brown; subbasal black striæ from costa and cell; a dark spot in cell before the antemedial line, which is black, angled outwards below costa and at submedian fold and excurved above inner margin; the medial area with triangular black-brown patch from costa to median nervure and the area below the cell suffused with dark brown before the medial line, which is blackish, excurved in the cell and sinuous below it; orbicular round, white defined by black and with brown point in centre, some rufous beyond it; reniform defined by black on inner side and very faintly by brown on outer; postmedial line indistinct, double, brown, bent outwards below costa, then waved, incurved at discal fold, strongly incurved below vein 4, incurved below vein 2, then oblique and slightly angled outwards at vein 1, two oblique blackish striæ beyond it from costa; subterminal line blackish, angled outwards below vein 7, bent inwards at discal fold, then slighter, somewhat waved, excurved at middle and above inner margin; a red-brown patch at apex; a terminal series of black striæ and small dentate mark below vein 2. Hind wing dark reddish brown, the cilia whitish with a brown line through them. Underside of both wings dark reddish brown with faint discoidal spots and curved postmedial line.

Ab. 1. Fore wing with the black-brown patch on costal area much less prominent and without the dark brown on inner area.

Hab. Mexico, Jalapa (*Schaus*, *Trujillo*), 1 ♂, 4 ♀, Orizaba; Guatemala, Cahabon (*Champion*), 1 ♂, Guatemala City (*Rodriguez*), 1 ♀, Godman-Salvin Coll. *Exp.* 38–44 millim.

8193. **Charadra dispulsa.** (Plate CCXXXIV. fig. 16.)

Charadra dispulsa, Morr. Proc. Bost. Soc. N. H. xvii. p. 213 (1874); Smith, Cat. Noct. N. Am. p. 33.

♂. Head, thorax, and abdomen white slightly irrorated with black; antennæ red-brown, the shaft white above towards base; palpi black except at tips; tegulæ with black medial band; patagia with black bars near tips; thorax with four pairs of very slight blackish spots; pectus blackish in front; tibiæ and tarsi banded black and white; abdomen with the crests blackish at base. Fore wing white slightly irrorated with black, a pale yellow tinge in submedian fold, on inner margin, and on terminal area; subbasal black striæ from costa and cell; a small black spot on inner margin before the antemedial black line, which is angled outwards below costa, then erect and very slightly sinuous; orbicular and reniform pale yellow, the former defined by black and with some brown scales in centre, the latter defined by black on inner side and its centre by brown on inner side; a slight sinuous blackish medial shade; postmedial line black, bent outwards below costa, strongly incurved and slightly dentate below vein 4, again incurved below vein 2, then oblique and very slightly angled at vein 1, some black points beyond it on costa; subterminal line slight, blackish, oblique to vein 6, then bent inwards, excurved at veins 4, 3, and with minute black spot at submedian fold; a fine black terminal line interrupted at the veins; cilia with a blackish line through them. Hind wing white, the veins, costal and terminal areas tinged with brown, the last narrowing to tornus; cilia chequered brown and white at base; the underside with the costal area and the terminal area to vein 3 slightly irrorated with brown, a curved slightly waved subterminal line and black terminal line from costa to submedian fold.

♀. Fore wing with hardly any yellow.

Hab. U.S.A., Texas, 1 ♂, 1 ♀. *Exp.* 44 millim.

Genus **MOMA.**

	Type.
Moma, Hübn. Verz. p. 203 (1818)	*ludifica.*
Trichosea, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 213 (1874)	*ludifica.*

Proboscis fully developed; palpi obliquely upturned, the 2nd joint hardly reaching to middle of frons and rather broadly fringed with hair in front, the 3rd short; frons smooth, with tuft of hair; eyes large, round; antennæ of male almost simple; thorax clothed with hair and hair-like scales and without distinct crests; tibiæ moderately fringed with hair; abdomen with dorsal series of hairy crests and lateral fringes of hair. Fore wing with the apex rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Abdomen with dorsal series of distinct black spots.
  a. Fore wing silvery white without ochreous tinge.
    a^1. Fore wing with the subterminal line not forming dentate black mark between veins 7 and 4 ..... *obsolescens.*

b^1. Fore wing with the subterminal line forming dentate black marks between veins 7 and 5 ..... *champa.*
b. Fore wing ochreous white.
a^1. Fore wing with the subterminal line finely dentate between veins 7 and 5 ..... *ainu.*
b^1. Fore wing with the subterminal line forming dentate black spots between veins 7 and 5.
a^2. Fore wing with the postmedial line strongly dentate ..... *gypsochroa.*
b^2. Fore wing with the postmedial line slightly dentate ..... *ludifica.*
B. Abdomen without dorsal series of distinct black spots ... *nigrescens.*

8194. **Moma obsolescens.** (Plate CCXXXIV. fig. 17.)

Moma obsolescens, Warr., Seitz, Gross-Schmett. Indo-Austr. xi. pl. 5 (1912).

Head and thorax white; antennæ black except at base and with a black line between their bases; palpi black above, with white ring at extremity of 2nd joint; lower part of frons black; tegulæ with black marks at base and medial band; patagia with black spot near base, oblique bar near tips and the edges black; dorsum of thorax with four pairs of black spots and the metathorax with lateral black marks; legs banded black and white; abdomen white, the crests black except at tips, the sides yellow except towards extremity, sublateral series of black spots. Fore wing silvery white slightly irrorated with blackish; black points at base of costa and median nervure; the costal edge black towards base; minute subbasal black streaks in and below the cell and a spot above vein 1, antemedial line double, black, excurved below costa and cell and above inner margin and incurved in cell and at vein 1, the inner line strongly incurved in cell, then much interrupted; orbicular a small black annulus, the reniform defined by a black striga on inner side; an oblique black bar from middle of costa and oblique crenulate line from discal fold to inner margin; postmedial line black, bent outwards below costa, oblique to vein 6, then crenulate and rather inwardly oblique, a wedge-shaped black spot beyond it from costa and a series of short black streaks on the veins; subterminal line with oblique black bar from costa, bent outwards and obsolete at vein 7, then waved; a series of short black streaks on the extremities of the veins; a fine black terminal line; cilia chequered black and white. Hind wing white, the inner area clothed with yellow hair, the veins fuscous, the costal area tinged with fuscous; a fine black terminal line; cilia chequered black and white. Underside of fore wing suffused with blackish except on inner area, the cell and area just below it clothed with yellow-brown hair in male, some white marks on costa; hind wing with small black discoidal spot, medial and postmedial black spots on costa, and short postmedial black streaks on veins 6 to 2.

Hab. Punjab, 1 ♂, Kulu, Sultanpur (*G. Young*), 2 ♀ type, Murree (*Harford*), 1 ♂, Thundiani (*Yerbury*), 2 ♂, Kangra (*Hocking*), 1 ♂, 1 ♀. *Exp.* 42–50 millim.

8195. **Moma champa.** (Plate CCXXXIV. fig. 18.)

Moma champa, Moore, P. Z. S. 1879, p. 403, pl. 33. f. 2; Alph. Rom. Mém. ix. p. 158, pl. 13. f. 4; Hmpsn. Moths Ind. ii. p. 435; Seitz, Gross-Schmett. pal. iii. pl. 2; Staud. Cat. Lep. pal. p. 130.

Moma champa, ab. *diffusa*, Warr., Seitz, Gross-Schmett. Indo-Austr. xi. pl. 5 (1912).

♂. Head and thorax white; antennæ black except at base and with black bar between their bases; palpi with the 2nd joint above except at extremity and the 3rd joint black; frons black at sides; tegulæ with black bars at base and medial black band; patagia with spots at base, band near tips and the outer edge black; tibiæ and tarsi banded black and white; abdomen white, yellow at sides, the dorsal crests black at base, the anal segment with black band, sublateral series of black spots. Fore wing silvery white with a pinkish tinge; small basal black spots on costa and median nervure; subbasal streaks on costa and subcostal nervure, a small spot below the cell and larger spots above vein 1 and on inner margin; antemedial line double, black, excurved below costa and cell and above inner margin, strongly incurved in the cell and incurved at vein 1, a black striga beyond it below submedian fold; orbicular a small black annulus; reniform represented by two black bars, the outer giving off short streaks; an oblique black bar from middle of costa and a strong oblique crenulate line from discal fold to inner margin; postmedial line double, black, bent outwards below costa, downcurved to vein 6, then oblique and crenulate, the outer line forming a small triangular spot at costa and with its crenulations filled in with black; subterminal line with oblique black bar from costa, bent outwards and obsolete at vein 7, then lunulate, the lunules between veins 7 and 4 strong; short black streaks in the interspaces before termen; a fine terminal black line; cilia chequered black and white. Hind wing white, the inner area clothed with yellow hair; the veins of terminal half blackish; costal area tinged with fuscous; a fine black terminal line; cilia chequered black and white. Underside of fore wing suffused with fuscous except on inner area, the cell and area just below it clothed with yellow-brown hair, some white marks on costa; hind wing with black spot at middle of costa, postmedial black bar from costa with excurved line from it to vein 2, and black patch at apex.

♀. Hind wing with the terminal area more or less strongly suffused with fuscous narrowing to tornus; underside of fore wing without yellow-brown hair in and below the cell.

Hab. E. Siberia, Ussuri; Japan, Kiushiu, 1 ♀; W. China, Chang-yang (*Pratt*), 1 ♂; Punjab, 1 ♂, Dharmsála, 1 ♂ type, Kangra (*Hocking*), 1 ♀, Umballa, 1 ♀; Sikhim (*Möller*), 1 ♀; Assam (*Badgley*), 4 ♂, 3 ♀, Khásis, 1 ♂; Travancore, 1 ♀. *Exp.* 46–58 millim. Type † *diffusa* in Coll. Rothschild.

8196. **Moma ainu.** (Plate CCXXXIV. fig. 19.)

Moma champa var. *ainu*, Wileman, Trans. Ent. Soc. 1911, p. 242, pl. 30. f. 19.

♂. Head and thorax white with an ochreous tinge; antennæ black; palpi black with the extremity of the 3rd joint white; frons black at sides and with black bar above; tegulæ with a black band at middle and some black behind them; outer edge of patagia and a band near their extremities black; metathorax with lateral black patches; black streaks below the shoulders; tibiæ banded black and white, the tarsi black ringed with white; abdomen yellow, the dorsal crests and lateral tufts black tipped with white, the extremity white. Fore wing white with an ochreous tinge; small black spots at base, on costa and below the cell, and the base of costa black; an oblique subbasal streak in the cell and small spot below the cell, with spots beyond it above vein 1 and the inner margin; postmedial line double, black, the inner line interrupted, angled outwards below the costa, in submedian fold, and above inner margin, and inwards in cell and on vein 1; orbicular a small black annulus; reniform represented by two black bars; a medial black spot on costa and oblique dentate line from cell to inner margin; postmedial line double, black, the inner line waved, the outer forming dentate black marks, obliquely curved from costa to vein 4, then incurved, the costa beyond it black with some white points; subterminal line black, oblique from costa and interrupted below costa, then strongly dentate; the extremities of the veins streaked with black; a black terminal line; cilia chequered black and white. Hind wing pale yellow, the terminal area fuscous with darker streaks on the veins, broad at costa, narrowing to tornus; a slight discoidal lunule; cilia white intersected with black; the underside white, the inner area, median nervure and base of vein 2 yellow, black bars from costa at and beyond middle and a patch at apex, a discoidal spot, the veins of terminal area streaked with black, a black terminal line.

Hab. Japan, Yezo, Oshima R., Tobetsu (*Wileman*), 1 ♂.
Exp. 40 millim.

8197. **Moma gypsochroa**, n. sp. (Plate CCXXXIV. fig. 20.)

♀. Head white; antennæ black except at base and with black bar between their bases; palpi black above except at extremity of 2nd joint and with the 3rd joint black; lower part of frons black; thorax ochreous white; tegulæ with black bars at base and black band at middle; patagia with spot at base, band near tips and the outer edge black; prothorax with black spot, the meso- and metathorax with paired spots and the latter with some black at sides; legs banded black and white; abdomen white, orange-yellow at sides, the crests black except at tips, the anal segment with black patch, sublateral series of black spots. Fore wing ochreous white; black spots at base of costa and median nervure; a black streak on subbasal part of costa, short streaks on subcostal nervure and below

the cell, spot below submedian fold, and short streak above inner margin; antemedial line double, black, the inner line much interrupted, angled outwards below costa, above and below submedian fold and above inner margin; orbicular a small black annulus; reniform defined at sides by black bars and with short streaks beyond its upper and lower extremities; medial line black, obliquely incurved from below costa to lower angle of cell, then oblique and crenulate; postmedial line double, black, the outer line strong towards costa, bent outwards below costa, oblique and sinuous to vein 6, then strongly dentate, incurved below vein 4, some alternating black and white marks beyond it on costa; subterminal line with oblique black bar from costa, bent outwards and obsolete at vein 7, then represented by a series of dentate black marks slighter between veins 4 and 2; the veins towards termen with short black streaks; cilia chequered black and white. Hind wing with the costal area to discal fold and the terminal area fuscous, the latter narrowing to tornus, the rest of wing yellow; a whitish postmedial line from vein 6 to tornus with minute black streaks before it on the veins and the veins beyond it streaked with black; white striæ before termen except towards apex and tornus; cilia chequered black and white. Underside of fore wing suffused with fuscous, some white marks on costa, the termen suffused with white scales; hind wing white, the inner area yellow, a small blackish discoidal spot, medial and postmedial bars from costa, the latter obliquely curved and giving rise to the postmedial line extending to vein 3, a subterminal shade broad at costa, interrupted between veins 3 and 2 and ending on termen at submedian fold.

Hab. CEYLON, Ohiya (*Mackwood*), 1 ♀ type. *Exp.* 54 millim.

8198. **Moma ludifica.**

Noctua ludifica, Linn. Syst. Nat. ed. x. p. 514 (1758); Esp. Schmett. iv. pl. 120. ff. 1, 2; Hübn. Eur. Schmett., Noct. ff. 23, 524, 580-1; Dup. Lép. Fr. vi. pl. 85. f. 6; Frr. Beitr. pl. 63; Staud. Cat. Lep. pal. p. 130.

♂. Head white; antennæ black, the shaft white above towards base and with black bar between their bases; palpi black above with white ring at extremity of 2nd joint, the lower part of frons black; thorax ochreous white, the tegulæ with black band, the patagia with black spot near base, band near extremity and black outer edge, the dorsum of thorax with four pairs of black spots and the metathorax with black spots at sides; pectus white; legs banded black and white; abdomen ochreous white, the crests black at base and the anal tuft with two black spots, the sides orange-yellow, the ventral surface white with sublateral series of black spots. Fore wing ochreous white; a black spot at base of costa, small subbasal spots in and below the cell and a larger spot above vein 1; antemedial line double, black, sinuous, strongly excurved in submedian interspace and angled inwards at vein 1, the inner line expanding into a spot in the cell, then interrupted; orbicular and reniform white defined by black, the former small, round, the

latter open above and slightly angled inwards on median nervure, some black irroration beyond its upper and lower extremities and before its lower inner extremity; a black bar from middle of costa, and oblique crenulate line from discal fold to inner margin; post-medial line double, black, slightly bent outwards below costa, oblique to vein 6, then dentate, incurved below vein 4, the outer line forming a small triangular spot on costal area with a white point at costa and white and black points beyond it; subterminal line with oblique black bar from costa, bent outwards and almost

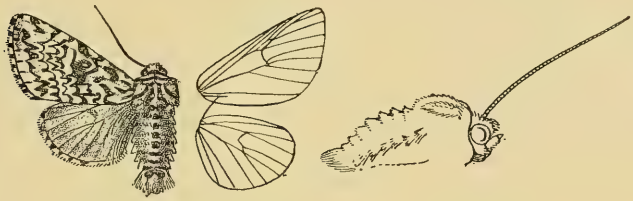


Fig. 97.—*Moma ludifica*, ♂. ½.

obsolete on vein 7, then strong waved, somewhat excurved at middle; short black streaks on the extremities of the veins and some black irroration before termen below apex; cilia chequered black and white. Hind wing white, the inner area clothed with orange-yellow hair; the veins streaked with fuscous and the costal area slightly irrorated with fuscous; a more or less developed fuscous subterminal shade from vein 6 to termen at vein 1, sometimes almost obsolete, sometimes broad above and incurved at vein 2; a terminal series of black striæ; cilia chequered white and black except towards tornus. Underside of fore wing white with brownish suffusion in and below the cell except towards base and black above it on costa, the costal half of terminal area black with a white postmedial bar from costa and spots above and below vein 5, some small white spots beyond it on costa; hind wing with small black discoidal spot, irregular mark from middle of costa, postmedial bar from costa and minute streaks on the veins, and streak on costa near apex.

♀. Hind wing with the terminal area fuscous broadly at costa, narrowing to a point at vein 1; the underside of fore wing without yellow-brown hair in and below the cell.

Ab. 1. Fore wing with the black markings more diffused; hind wing wholly tinged with blackish except the yellow inner area.

Hab, France, Sand Coll.; Germany, Zeller, Frey & Leech Colls.; Austria, Leech Coll.; Hungary; Switzerland; N. Italy; S. Sweden; W. Russia, Livonia. *Exp.* 40–52 millim.

Larva. Kirby, Butt. & Moths Eur. p. 155; Hffm. Raup. p. 77, pl 22. f. 12.

Greyish blue with dorsal and subdorsal yellow lines and white lateral lines; the 3rd somite with dorsal white patch and the anal somite with lateral white patches; warts hairy; 11th somite with a hairy tubercle. Food-plants: *Sorbus aucuparia* and *Cratægus oxyacantha*. 9–10.

8199. **Moma nigrescens.** (Plate CCXXXIV. fig. 21.)

Moma nigrescens, Warr. ined.

Head and thorax white faintly tinged with ochreous; antennæ black except towards base and with black bar between their bases; palpi black except in front towards base and at extremity of 2nd joint; sides of frons black; tegulæ with black bar at base and band at middle; patagia with spot at base, band towards tips and the outer edge black; pro- and metathorax with black spots, the mesothorax with pair of spots; pectus black and white; legs banded black and white; abdomen whitish tinged with fuscous, the anal segment with a black band, the ventral surface white with sublateral series of blackish spots. Fore wing white, faintly tinged with ochreous; small black spots at base of costa and median nervure; a subbasal black streak on costa; small spots in and below the cell with a larger spot beyond them above vein 1; antemedial line double, black, the inner line more or less interrupted except towards costa, excurved below costa, above and below submedian fold and above inner margin; orbicular a small black annulus; reniform defined by black at sides; a medial black bar from costa and crenulate line from cell to inner margin; the area beyond the cell and below the cell between the antemedial and medial lines suffused with purplish fuscous; postmedial line double, black, the outer line forming a triangular spot at costa, bent outwards below costa, obliquely curved to vein 6 then dentate, incurved below vein 4, some white points beyond it on costa; subterminal line with oblique black bar from costa, bent outwards and obsolete at vein 7, then sinuous, forming dentate marks above and below vein 5 and angled inwards at vein 2; a diffused black patch on termen below apex, then short black streaks on the extremities of the veins; cilia chequered black and white. Hind wing fuscous, the inner area yellow, the veins of terminal half with black streaks; an indistinct sinuous whitish postmedial line ending at tornus; cilia chequered black and white. Underside of fore wing suffused with fuscous, some white marks on costa; hind wing with slight blackish discoidal spot and curved white postmedial band.

Hab. Ceylon, Uva (*Green*), 1 ♂ type, Haputale (*Mackwood*), 1 ♀, Maskeliya (*Alston*), 1 ♀. *Exp.* 40–46 millim.

Genus **BATHYRA**.

Type.

Bathyra, Wlk. xxxii. 403 (1865)..... *sagata*.

Proboscis fully developed; palpi obliquely upturned, short, slightly fringed with hair, frons smooth; eyes large, round; antennæ of male almost simple; thorax clothed with hair and hair-like scales, the patagia with tufts of hair at extremities curled upwards, the pro-, meso-, and metathorax with divided crests; tibiæ fringed with long hair; abdomen with dorsal series of hairy crests, the crest on 3rd segment very large. Fore wing with the apex rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 7, 8, and 9, 10 stalked in male, in female 9 from 10 anastomosing with 8 to form a long narrow areole; 11 from cell. Hind wing

with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing largely suffused with fulvous, the reniform broken up into small white spots..... *sagata.*
B. Fore wing with very slight fulvous suffusion, the reniform a well defined blackish lunule..... *chavannesi.*

8200. **Bathyra sagata.** (Plate CCXXXIII. fig. 15.)

Diphtera sagata, Wlk. ix. 38 (1856); Kirby, Cat. Lep. Het. p. 589.

♂. Head and thorax whitish tinged with rufous; antennæ black except basal joint; palpi black with white rings at extremities of 2nd and 3rd joints; patagia with a brown line near tips; prothoracic crests blackish at base, the metathoracic crests black; some black below shoulders and fulvous below wings; fore and mid tibiæ with

Fig. 98.—*Bathyra sagata*, ♂. ½.

black and fulvous bars, the tarsi except at base blue-black, the whole hind legs blue-black; abdomen with the dorsum ochreous whitish, the sides fulvous, the basal crest and the crests on 2nd and 3rd segments except at tips black, the anal segment with a black band, the ventral surface ochreous whitish with diffused black sublateral stripes. Fore wing white; the basal costal area black with two white spots on it defined by fulvous, conjoined to a subbasal black spot, defined on outer side by fulvous below the cell; a broad band of fulvous, blue-grey and black irroration before the antemedial line except towards costa; antemedial line with double black spots defined by fulvous at costa, then fulvous and black defined on

inner side by white, waved; orbicular a minute fulvous annulus with black point on its outer edge; reniform narrow defined by fulvous and below by black; medial line black defined by fulvous, forming a triangular spot at costa, obliquely curved to lower angle of cell, then oblique and waved; a patch of fulvous, blue-grey and black in lower part of end of cell and between veins 3 and 2, with a small white spot defined by fulvous and black at origin of vein 2 and a patch between the antemedial and medial lines from submedian fold to inner margin; postmedial line with wedge-shaped black spot defined by fulvous at costa, then fulvous and black, dentate, incurved below vein 4; the postmedial area with fulvous, blue-grey and black irroration, and alternating white and black spots on costa; the terminal area with an ochreous band with some fuscous irroration on it and irregularly dentate inner edge; a small black spot on costa before apex and terminal series of triangular black spots defined by white. Hind wing fulvous; a rather diffused sinuous blackish line from costa beyond middle to termen at vein 1, the area beyond it yellowish with black streaks on the veins. Underside of fore wing with the basal half fulvous with the costa black, the medial line and a discoidal lunule black, the veins beyond the cell with black streaks to the subterminal line; hind wing with irregularly waved medial line, a black spot on costa beyond the postmedial line.

♀. Fore wing with the orbicular larger; hind wing with diffused black medial shade and diffused black postmedial band.

Hab. Mexico, Cuernavaca; Colombia, Popayan, Bogotá; Venezuela, Merida, 1 ♂, 1 ♀; Surinam; Peru, Carabaya, St. Domingo; Hab. ign., 1 ♀ type. *Exp.* ♂ 66, ♀ 94–100 millim.

Pupa. Red-brown covered with spatulate rufous scales tipped with white.

*8201. **Bathyra chavannesi.** (Plate CCXXXIII. fig. 16.)

Panthea chavannesi, Feld. Reis. Nov. pl. 101. f. 1 (1874).

♀. Head and thorax creamy white; palpi and antennæ black; tegulæ with a small dorsal black spot at base, the mesothorax with a pair of black points; pectus black and white in front, fulvous at sides; legs black, the mid tibiæ and tarsi and the hind tarsi banded with white; abdomen fulvous orange, a dark brown dorsal stripe with the crests whitish at tips, the extremity dark brown, the anal tuft whitish, the ventral surface dark brown mixed with whitish. Fore wing creamy white thickly irrorated and suffused with grey-black, some fulvous suffusion on subbasal area, in submedian fold and in the cell; a subbasal black striga from costa defined on each side by white; antemedial line white, waved, defined on outer side by a black bar from costa with a white patch beyond it; orbicular a small white spot defined by fulvous; reniform incompletely defined by blackish and with some black in centre, placed on a

diffused white patch from costa; a strong black shade from middle of costa to median nervure, then a line excurved below submedian fold, a white spot before it above the fold, and a white band beyond it below the fold; postmedial line indistinct, black, interrupted, slightly defined on outer side by white, excurved below costa, incurved at discal fold, then minutely waved, excurved at middle and angled inwards at submedian fold, some small white spots beyond it on costa; a diffused white subterminal band, excurved below vein 7, angled inwards at discal fold, excurved and waved at middle; a series of black spots defined by white on termen and cilia. Hind wing whitish, the basal and inner areas suffused with fulvous orange; a slight fuscous discoidal lunule; a diffused dentate fuscous line from costa beyond middle to tornus becoming deep black below vein 2; a series of black striæ on termen with black striæ beyond them at tips of cilia; the underside with some blackish near base of costa, a diffused waved fuscous medial line, deep black at costa, a black discoidal lunule, a waved blackish line from costa to vein 5 before the black postmedial line.

Hab. Centr. Brazil, type † ♀ in Coll. Rothschild. *Exp.* 78 millim. The type is labelled "Brezil int.," not Bogotá as given in the text.

Genus **GAUJONIA**,

	Type.
Gaujonia, Dogn. Le Nat. (2) v. p. 125 (1891)	*arbosi.*

Proboscis fully developed; palpi obliquely upturned, short, moderately fringed with hair in front; frons smooth; eyes large, round; antennæ of male laminate and simple; thorax clothed with hair only and without crests; tibiæ moderately fringed with hair; abdomen with dorsal series of hairy crests. Fore wing rather long and narrow, the apex produced and rounded, the termen evenly curved and not crenulate; vein 3 from before angle of cell; 5 from just above angle; 6 from below upper angle; 9 from 10 anastomosing with 8 to form a long narrow areole, or 9 and 10 from 7, 8, 9 again joining 8 to form a slight areole; 11 from cell. Hind wing with the cell more than half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing without lunulate black centre to the reniform; abdomen ochreous white with slight dark bands.	
a. Fore wing of male with all the lines represented by series of black points on the veins	*arbosi.*
b. Fore wing of male with the lines on basal and terminal areas waved.	
a^1. Fore wing without V-shaped black mark at base of vein 2; abdomen with small black crests on basal segments	*arbosioides.*
b^1. Fore wing with V-shaped black mark at base of vein 2; abdomen with diffused black bands at middle of dorsum	*vau-nigrum.*
B. Fore wing with lunulate black centre to the reniform; abdomen fuscous brown	*renifera.*

8202. Gaujonia arbosi.

Gaujonia arbosi, Dogn. Le Nat. 1891, p. 126; id. Lép. Loja, p. 86, pl. 8. f. 17.

♂. Head and thorax pale sulphur-yellow; antennæ black except at base and with black spot between their bases; palpi black above; frons with black bar above; tegulæ with black bands near base and tips; patagia with blackish spot at middle and three near upper edge; thorax with four pairs of black spots; pectus white; fore tibiæ and tarsi banded white and black, the mid and hind tibiæ with black bands at extremities and the tarsi with some black towards extremities; abdomen yellowish white with small dorsal black spots towards base and extremity and bands on medial segments. Fore wing hyaline, the veins and margins pale sulphur-yellow with numerous small black spots; a subbasal series from

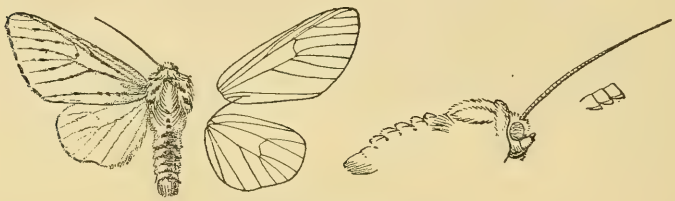


Fig. 99.—*Gaujonia arbosi*, ♂. ½.

costa to submedian fold, a double antemedial series, a medial series, a discoidal spot with some points above it at upper angle of cell and on costa, a double postmedial series, and a subterminal series; cilia chequered black and yellow. Hind wing hyaline, the veins yellowish white, the inner area clothed with white hair; cilia chequered black and yellow.

♀. Fore wing with the black spots tending to become lines, the orbicular a small black annulus, the reniform slightly defined by black.

Hab. Colombia (*Kalbreyer*), 1 ♂, Bogota, 1 ♂; Ecuador, Loja, type † ♂ ♀ in Coll. Dognin; Peru, Huancabamba. *Exp.* ♂ 48, ♀ 54 millim.

8203. Gaujonia arbosioides. (Plate CCXXXV. figs. 1 ♂, 2 ♀.)

Gaujonia arbosioides, Dogn. Lép. Loja, p. 87 (1894).

♂. Head and thorax pale sulphur-yellow; sides of palpi and frons black; antennæ black except at base and with a blackish bar between them; tegulæ with black lines near base and tips; patagia with black spots and curved line near upper edge; the pro-, meso-, and metathorax with paired black spots; tibiæ and tarsi black and yellow; abdomen yellowish white with the small crests towards base black. Fore wing pale sulphur-yellow; a double subbasal

series of small black spots from costa to vein 1; a double waved black antemedial line, the inner line obsolete towards costa and with an oblique black spot before it above inner margin; a small black annulus in middle of cell; reniform incompletely defined by black and with a minute spot in centre; a waved black medial line, excurved in cell; postmedial line black, bent outwards below costa, then oblique dentate and produced to points on the veins, some black points beyond it on costa, a series on the veins, and a sinuous line on inner area; a dentate black subterminal line with a series of short black streaks beyond it on the veins; a terminal series of black striæ and a series at tips of cilia. Hind wing semihyaline yellowish white.

♀. Fore wing with all the lines stronger, some brown irroration beyond the postmedial and subterminal lines.

Hab. Colombia, Monte Tolima (*Fassl*), 1 ♂; Ecuador, Loja, type † ♂ in Coll. Dognin, Zamora (*Baron*), ♀ in Coll. Rothschild. *Exp.* ♂ 42, ♀ 52 millim.

8204. **Gaujonia vau-nigrum**, n. sp. (Plate CCXXXV. fig. 3.)

Head and thorax sulphur-yellow; antennæ fuscous, the base of shaft white; palpi black at sides; frons with lateral minute black marks; vertex of head with black spot; tegulæ with black line at middle; patagia with black marks near edges; pro-, meso-, and metathorax with paired black marks; tarsi banded with black; abdomen white at base, pale yellow towards extremity, some black marks on dorsum. Fore wing sulphur-yellow, the interspaces hyaline except on basal and inner areas; a small black spot at base of costa; a subbasal black spot on costa with oblique striga from it and small spot below the cell; an oblique bar above vein 1 before the two waved black antemedial lines, the inner line rather interrupted; orbicular a small black annulus; reniform incompletely defined by black scales and much constricted at middle; medial line represented by black marks on costa and subcostal nervure, a V-shaped mark at base of vein 2, and waved line from submedian fold to inner margin; postmedial line represented by double black spots on the veins from costa to vein 2 and a double sinuous line on inner area, a small black spot beyond it on costa; a waved black subterminal line followed by a series of slight marks on the veins; a terminal series of small black lunules; cilia chequered with black at tips. Hind wing hyaline, the inner area clothed with white hair, the cilia slightly tinged with yellow; the underside with the costa yellowish.

Hab. Colombia, Monte Tolima, Bogotá; Venezuela, 1 ♂ type; Peru, Agualani, Oconeque, Limbani. *Exp.* 48–68 millim.

8205. **Gaujonia renifera**, n. sp. (Plate CCXXXV. fig. 4.)

Head and thorax pale sulphur-yellow; antennæ fulvous brown except at base above and with black bar between their bases; palpi

black above; frons black at sides; tegulæ with diffused black bands near base and tips; patagia with three black spots near upper edge and one at middle; thorax with four pairs of small black spots; pectus white; tibiæ and tarsi banded white and black; abdomen fuscous brown, the anal tuft and ventral surface ochreous white. Fore wing hyaline, the veins and margins pale sulphur-yellow with numerous small black spots and short streaks; a subbasal series from costa to vein 1, a double antemedial series, the orbicular a small black annulus with yellow centre, the reniform narrow with black bar in centre and yellow annulus defined by black, a medial series of short black streaks with small V-shaped mark at origin of vein 2, a double postmedial series, a subterminal series, and the extremities of the veins with short black streaks; a terminal series of black striæ and the cilia chequered yellow and black. Hind wing hyaline, the veins ochreous white, the inner margin clothed with brownish white hair; a minute black streak at middle of median nervure, a double postmedial series of points on veins 6 to 2, minute subterminal streaks on veins 6 and 5, and terminal streaks on veins 4, 3, 2; a terminal series of black striæ except towards tornus.

Hab. S.E. Peru, Agualani (*Ockenden*), 1 ♂ type, Limbani, Oconeque, Tinguri, Suambari. *Exp.* 52–60 millim.

Genus **LICHNOPTERA.**

Type.

Lichnoptera, Herr.-Schäff. Aussereur. Schmett. p. 14 (1850)..... *gulo.*

Proboscis fully developed; palpi obliquely upturned, short, moderately fringed with hair in front; frons smooth; eyes large, round; antennæ of male laminate and simple; thorax clothed with hair and hair-like scales and without distinct crests; tibiæ moderately fringed with hair; abdomen with dorsal series of hairy crests. Fore wing rather long and narrow, the apex produced and rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near lower angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form a long narrow areole; 11 from cell. Hind wing with the cell more than half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing without small black annulus or spot in centre of the reniform.
  a. Fore wing with small black annulus below middle of cell.
    a^1. Hind wing without fuscous suffusion, an oblique blackish bar to tornus.
      a^2. Hind wing with the cilia chequered black and white ..... *decora.*
      b^2. Hind wing with the cilia not chequered black and white ..... *felina.*
    b^1. Hind wing with more or less fuscous suffusion and with diffused fuscous medial and subterminal bands ..... *cavillator.*

b. Fore wing without black annulus below middle of cell.
*a*¹. Fore wing with the ground-colour white.
*a*². Hind wing suffused with fuscous.
*a*³. Fore wing with dentate blackish marks before the subterminal line above and below middle. *albidiscata*.
*b*³. Fore wing with highly crenulate blackish line before the subterminal line ..... *rufitincta*.
*b*². Hind wing white not suffused with fuscous ..... *illudens*.
*b*¹. Fore wing pale sulphur-yellow.
*a*². Hind wing not wholly suffused with fuscous.
*a*³. Fore wing with waved dark shade before the subterminal line ..... *gulo*.
*b*³. Fore wing with the shade before the subterminal line with straight outer edge ..... *primulina*.
*b*². Hind wing wholly suffused with fuscous ..... *spissa*.
B. Fore wing with small black annulus or spot in centre of reniform.
a. Fore wing with the whole inner area suffused with fuscous ..... *marmorifera*.
b. Fore wing with the inner area mostly white.
*a*¹. Frons with black-brown mixed; fore wing with the subterminal line more strongly and evenly waved. *atrifrons*.
*b*¹. Frons pure white; fore wing with the subterminal line less strongly waved and incurved above and below middle.
*a*². Fore wing with small black spot in centre of reniform, the postmedial area mostly white; hind wing with the inner area yellow except towards tornus ..... *maxstoides*.
*b*². Fore wing with small black annulus in centre of reniform, the postmedial area red-brown except towards costa and inner margin; hind wing with the inner margin fringed with yellow hair in male ..... *mœsta*.

8206. **Lichnoptera decora.** (Plate CCXXXV. figs. 5 ♂, 6 ♀.)

Charadra decora, Morr. Proc. Ac. Nat. Sci. Phil. 1875, p. 55; Smith, Cat. Noct. N. Am. p. 33.
Lichnoptera felina, Druce, Biol. Centr.-Am., Het. ii. p. 471 (part.).

♂. Head and thorax creamy white; antennæ, palpi above, and sides of frons black; tegulæ with black line at base and bars at middle; patagia with black bars at base and three black spots near upper edge; pro- and mesothorax with paired black spots, the metathorax with two pairs of black bars; tibiæ and tarsi banded with black; abdomen white, the sides yellow except towards extremity, black segmental lines and sublateral series of small spots. Fore wing creamy white; a semicircular black mark at base of costa, small spot at base of cell and subbasal spot below the cell; a small black spot in cell, spot and bar above vein 1 and oblique mark above inner margin before the antemedial black line, which forms a semicircular mark at costa, then waved; orbicular represented by two small black annuli with some fuscous suffusion beyond and below them; two black discoidal striæ; medial line black, oblique and angled outwards below costa and in lower angle of cell, then

inwardly oblique and sinuous; postmedial line represented by a double series of small black spots and striæ, somewhat oblique to vein 4, then inwardly oblique and excurved below submedian fold, some fuscous suffusion beyond it from above vein 6 to below 2 and a black point on costa; subterminal line black, oblique to vein 6, then waved and much interrupted to vein 2, then stronger and waved; an incurved black bar from costa before apex and short black streaks on the termination of the veins; cilia chequered black and white. Hind wing white; slight fuscous marks at the angles of cell; traces of a double subterminal series of black points on the veins and an oblique black bar from vein 2 to tornus; a terminal series of black striæ; cilia chequered black and white. Underside of fore wing with antemedial, medial, and postmedial black spots on costa; hind wing with black discoidal lunule with black bar above it from costa and subterminal line from costa to vein 6.

♀. Abdomen with black dorsal bands on medial segments; hind wing with the oblique black bar to tornus strong.

Hab. U.S.A., California; Mexico, 1 ♂, Jalapa (*Godman, Trujillo, Hoege*), 2 ♂, 3 ♀, Durango (*Becker*), 1 ♀, Coatepec (*Brooks*), 1 ♀, Cordova (*Rümeli*), 1 ♀, Godman-Salvin Coll., Vera Cruz, Guadalajara, Orizaba. *Exp.* ♂ 44, ♀ 56–62 millim.

8207. **Lichnoptera felina.** (Plate CCXXXV. figs. 7 ♂, 8 ♀.)

Lichnoptera felina, Druce, Biol. Centr.-Am., Het. ii. p. 471, pl. 93. ff. 1, 2 (1898).

♂. Head and thorax creamy white; antennæ, palpi above, and sides of frons black; tegulæ with black medial bars; patagia with four black spots; dorsum of thorax with four pairs of black spots, the metathorax with black bars behind; tibiæ and tarsi banded with black; abdomen white, the sides orange-yellow except at extremity, dorsal and sublateral series of slight black spots. Fore wing creamy white; a semicircular black mark at base of costa; a small black spot at base of cell and subbasal spot below the cell; a small black spot in cell, two bars above vein 1 and two above inner margin before the black antemedial line, which forms a semicircular mark at costa, then waved; orbicular represented by two small black annuli with some fuscous suffusion beyond and below them; two black discoidal striæ; medial line black, oblique and angled outwards below costa and in lower extremity of cell, then inwardly oblique and waved; postmedial line double black, waved, much interrupted, with prominent black points on the veins, excurved below costa, incurved below vein 4 and excurved above inner margin, some fuscous suffusion beyond it except towards costa and a black point on costa; subterminal line black, waved, strong towards costa and inner margin, interrupted between veins 3 and 2; a curved black mark from costa before apex and black streaks on the extremities of the veins; cilia chequered black and white. Hind wing white, the disk semihyaline; an oblique black bar from

vein 2 to tornus. Underside of fore wing with small antemedial, medial, and postmedial black spots on costa; hind wing with black discoidal spot and medial and subterminal points on costa.

Ab. 1. Fore wing with the black lines interrupted and without fuscous suffusion on medial and postmedial areas.—Mexico.

♀. Fore wing with the black markings stronger; hind wing with the oblique black bar to tornus strong; terminal series of slight black striæ.

Hab. Mexico, Cuernavaca, Orizaba, in Coll. Rothschild; Guatemala (*Sadler*), 1 ♂, Guatemala City (*Rodriguez*), 1 ♂, 1 ♀, Quiche Mts. (*Champion*), 1 ♀; Costa Rica (*Van Patten*), 1 ♂, 1 ♀, Candelaria Mts. (*Underwood*), 1 ♂, 1 ♀ type, Godman-Salvin Coll., San José, Juan Vinas, Sitio, Asahar de Cartago; ? Cuba, Coll. Rothschild. *Exp.* ♂ 44, ♀ 64–76 millim.

8208. **Lichnoptera cavillator.** (Plate CCXXXV. figs. 9 ♂, 10 ♀.)

Diphtera cavillator, Wlk. ix. 37 (1856), ♂; Druce, Biol. Centr.-Am., Het. i. p. 259.
Diphtera bivaria, Wlk. ix. 39 (1856), ♀.
Moma gracilis, Swinh. Cat. Het. Mus. Oxon. ii. p. 101, pl. iii. f. 1 (1900).
Lichnoptera felina, Druce, Biol. Centr.-Am., Het. ii. p. 471 (part.).

♂. Head and thorax creamy white; antennæ blackish and with a black spot between their bases; palpi black above; tegulæ with medial black bars; patagia with four black spots; thorax with five pairs of black spots; tibiæ and tarsi banded with black; abdomen white, the sides orange-yellow except towards extremity, dorsal and sublateral series of black spots. Fore wing creamy white; a semicircular black mark at base of costa, a small black spot at base of cell and subbasal spot below the cell; small black spots in the cell and above vein 1 and inner margin before the antemedial black line, which forms a semicircular mark at costa and is double and waved below the cell; orbicular represented by small black annuli in and below the cell, some fuscous suffusion in and below it; reniform more or less incompletely defined by black, angled inwards on median nervure; medial line black, forming a semicircular mark at costa, obliquely incurved to the reniform, then oblique and waved, some fuscous irroration before it between submedian fold and vein 1; postmedial line represented by a double series of small black spots on the veins, slightly bent outwards below costa and incurved below vein 5, some slight dark lunules before it and some fuscous in the interspaces between and beyond the spots, a black point beyond it on costa; subterminal line black, incurved below costa, excurved at vein 7, then waved, an incurved black mark from costa before apex; the extremities of the veins streaked with black, connected by a line below vein 5; a terminal series of black striæ; cilia chequered black and white. Hind wing whitish suffused with fuscous black except the termen; diffused dark medial and subterminal lines; a black terminal line; cilia chequered black and white; the underside with the costal area white, the costal edge

black, a medial black bar from costa, the subterminal band indistinctly double.

Ab. 1. *gracilis.* Hind wing whiter, the inner half suffused with blackish between the medial and subterminal bands.

♀. Abdomen with the dorsal area black, the crests black at base, white at tips, the yellow at sides ending at 3rd segment, then the sides black. Hind wing with fuscous suffusion in submedian interspace except at base and termen, the bands broad and distinct.

Hab. Mexico, 1 ♂ type, Coatepec (*Brooks*), 1 ♂, Guerrero, Amula (*H. H. Smith*), 1 ♀, Godman-Salvin Coll., Cuernavaca, Guadalajara; ? Colombia. *Exp.* ♂, 42–48, ♀, 68 millim. Types † *bivaria* and *gracilis* in Mus. Oxon, the locality "India" for the latter is an error.

8209. **Lichnoptera albidiscata.** (Plate CCXXXV. figs. 11 ♂, 12 ♀.)

Panthea albidiscata, Dogn. Hét. Nouv. Am. Sud, vi. p. 14 (1912).

♂. Head and thorax white tinged with yellow; antennæ black with a black spot between their bases; palpi black, the extremities of 1st and 2nd joints white; tegulæ with some black at base and black band near tips; patagia with three oblique black bands; pro-, meso-, and metathorax with paired black spots; pectus with brown mixed; legs banded black and white; abdomen black-brown with some whitish at base, the anal tuft white with a black spot, the ventral surface white with small brown spots on medial segments. Fore wing white thickly irrorated with red-brown, the medial area more suffused with red-brown except in submedian interspace; a small black spot at base of costa; a subbasal white striga from costa defined at sides by blackish and small black spot below the cell; antemedial line blackish defined on inner side by white, waved, some blackish before and beyond it at costa; orbicular a small black annulus with white centre; reniform a white lunule obscurely defined by brown; a waved blackish medial line; the terminal half of costa with alternating black and white marks; postmedial line blackish, waved, incurved below vein 4; subterminal line whitish, defined on inner side by dentate black marks, large above and below veins 6 and 2, and on outer side by a very slight red-brown shade, oblique; a terminal series of triangular black spots; cilia chequered black and white. Hind wing cupreous brown, the inner area darker, a faint dark subterminal shade with the area beyond it paler except towards tornus; cilia chequered black and white except at tornus. Underside of fore wing with the basal half suffused with brown, a brown postmedial shade, excurved below costa and incurved below vein 4, some dentate subterminal marks above middle and towards tornus; hind wing with the costal and terminal areas paler, a blackish bar from middle of costa and curved postmedial and subterminal shades from costa to vein 2.

♀. Abdomen pale yellow dorsally slightly tinged with brown; fore wing with the lines more distinctly defined by white, the reniform a sinuous bar, more distinct white patches between the postmedial and subterminal lines below costa and at middle and the dentate dark marks before the latter reduced; hind wing pale yellow, a diffused brown antemedial shade and a subterminal shade with slightly waved outer edge; underside of both wings pale yellow, hind wing with more distinct ante- and postmedial lines.

Ab. 1. ♂. Fore wing whiter and less suffused with red-brown, a white streak in submedian fold; hind wing with whitish medial and terminal bands. Coll. Rothschild.

Ab. 2. ♀. Head, thorax, and fore wing with the ground-colour yellower.

Hab. Colombia, San Antonio (*Fassl*), type † ♂, ♀ in Coll. Dognin, Popayan, 1 ♂. *Exp.* ♂ 50, ♀ 70 millim.

8210. **Lichnoptera rufitincta**, n. sp. (Plate CCXXXV. fig. 13.)

Panthea cavillator, Druce, Biol. Centr.-Am., Het. i. p. 253 (part.), nec Wlk.

♂. Head and thorax white, the dorsum of thorax tinged with brown; antennæ brownish, a black bar between their bases; palpi black above; tegulæ with black line at base and band at middle; patagia with black spot at middle followed by two oblique bars and a streak near outer edge; pro-, meso-, and metathorax with black bands; tibiæ and tarsi banded with black; abdomen fuscous brown, some white at base, a whitish dorsal line and the extremity and ventral surface white. Fore wing white, in parts irrorated and suffused with red-brown; two small subbasal black spots on costa and spots below the cell and above vein 1; antemedial line double, red-brown and blackish, strong and black towards costa, then the inner line indistinct, waved; orbicular a black annulus; the reniform defined by blackish except above, oblique and sinuous; medial line blackish, oblique to lower angle of cell, then inwardly oblique and waved, with red-brown suffusion before it in the cell and between submedian fold and vein 1, a black spot beyond it on costa; postmedial line double, blackish, oblique, the inner line dentate, the outer reduced to points on the veins, some red-brown suffusion before and beyond it; subterminal line blackish, crenulate, with somewhat dentate brown marks on its inner side, excurved at vein 7, then oblique; a waved red-brown shade before termen; a terminal series of blackish lunules; cilia chequered blackish and white. Hind wing white suffused with fuscous brown except the termen; cilia chequered black-brown and white; the underside less strongly suffused with brown, a faint dark mark from middle of costa and diffused curved postmedial line.

Hab. Mexico, Jalapa (*Trujillo, Hoege*), 3 ♂ type, Godman-Salvin Coll. *Exp.* 50 millim.

8211. **Lichnoptera illudens.** (Plate CCXXXV. figs. 14 ♂, 15 ♀.)

Diphtera illudens, Wlk. ix. 37 (1856); Druce, Biol. Centr.-Am., Het. ii. p. 471; Dyar, Cat. Lep. N. Am. p. 99.
Panthea pythion, Druce, Biol. Centr.-Am., Het. i. p. 259, pl. 26. f. 6 (1889).

♂. Head and thorax white; antennæ black except at base and with a black bar between their bases; palpi with black patches on 1st and 2nd joints and the 3rd joint black; tegulæ with black bars at middle; patagia with black spots at base and middle and two oblique bars towards tips; dorsum of thorax with four pairs of black spots; tibiæ and tarsi banded with black; abdomen white dorsally tinged with brown, a dorsal series of blackish spots and sublateral series of small spots. Fore wing white, in parts irrorated and suffused with brown; a small black spot near base of costa, a curved subbasal striga from costa and small spot below the cell; some blackish suffusion on costa before the double waved black-brown antemedial line, the inner line interrupted in submedian interspace; orbicular a small black-brown annulus; reniform defined by black-brown except above, narrow, irregular, confluent with a minute white spot defined by black-brown on its inner edge; medial line black-brown, waved, oblique to lower angle of cell, then inwardly oblique, some patches of brown suffusion before it; postmedial line double, dark brown with two black spots at costa, bent outwards below costa, then oblique and dentate, some brown suffusion before and beyond it; subterminal line black-brown, crenulate, oblique; a dentate brown shade before termen; a terminal series of small blackish lunules defined by white; cilia chequered blackish and white. Hind wing white with a faint brownish tinge except at termen; the underside with slight medial, postmedial, and subterminal blackish marks on costa.

♀. Thorax with the black marks slight and obsolescent; fore wing irrorated and striated with brown, all the markings indistinct and broken up, the medial and subterminal lines the most distinct, the reniform a white lunule with brown suffusion before it.

Hab. U.S.A., Florida; Mexico, Jalapa (*Trujillo*), 1 ♀; Panama, Chiriqui (*Champion*), 3 ♂, 1 ♀ type *pythion*, Godman-Salvin Coll., Cana Mines (*Tylecote*), 1 ♂; Venezuela, 2 ♀ type, Merida. *Exp.* ♂ 48, ♀ 56–70 millim.

8212. **Lichnoptera gulo.** (Plate CCXXXV. figs. 16 ♂, 17 ♀.)

Lichnoptera gulo, Herr.-Schäff. Aussereur. Schmett. f. 529 (1850); Kirby, Cat. Lep. Het. p. 213.

♂. Head and thorax sulphur-yellow; antennæ dark brown with a black bar between their bases; palpi black except in front and at extremity of 2nd joint; frons black at sides; tegulæ black at base and with black medial band; patagia with four black spots and the shoulders with black spots; thorax with four pairs of black spots; tibiæ and tarsi banded with black; abdomen black-brown, the

extremity yellow, the ventral surface yellow with sublateral and ventral series of blackish spots. Fore wing sulphur-yellow irrorated with large black-brown scales especially in and below end of cell; a small black spot at base of costa and subbasal spots on costa and below the cell; antemedial line double, black, waved, indistinct and interrupted except at costa and inner margin; orbicular a small black annulus; reniform a narrow yellow lunule obscurely defined by black; an indistinct oblique waved line from lower angle of cell to inner margin; the terminal half of costa with alternating black and whitish spots; postmedial line very indistinct, double, oblique,

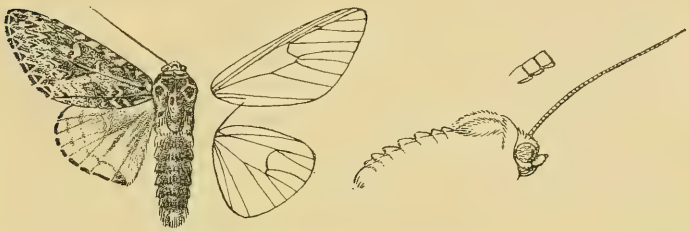


Fig. 100.—*Lichnoptera gulo*, ♂. ½.

waved; subterminal line defined on inner side by obscure dentate blackish marks; a dentate dark shade before termen; a terminal series of small black lunules defined by yellow; cilia chequered black and yellow. Hind wing semihyaline whitish tinged with brown, the inner area clothed with brown hair, the apical area and terminal area except towards tornus paler; a faint brown subterminal line ending in a darker bar at tornus; cilia chequered black and white; the underside with diffused brown medial shade.

♀. Abdomen yellow irrorated with black; fore wing with rather less dark irroration, the subterminal line not defined on inner side by blackish marks; hind wing uniform pale yellow, the cilia chequered black and white at tips.

Hab. Mexico, Jalapa, Coll. Rothschild; Costa Rica, Juan Vinas, Sitio (*Schaus*); ? Colombia (*Kalbreyer*), 1 ♂, 1 ♀, Bogotá; Venezuela, Merida, Coll. Rothschild. *Exp.* ♂ 50, ♀ 70 millim.

*8213. Lichnoptera primulina. (Plate CCXXXV. fig. 18.)

Lichnoptera primulina, Dogn. Hét. Nouv. Am. Sud, vi. p. 15 (1912).

♀. Head, thorax, and abdomen pale sulphur-yellow irrorated with dark brown; palpi blackish at sides and tips; frons with blackish bar above. Fore wing pale sulphur-yellow thickly irrorated with large black-brown scales in the interspaces; a slight yellow antemedial line from submedian fold to inner margin, angled inwards at vein 1; a small blackish spot in end of cell; a slight

yellow postmedial line, excurved below costa, then oblique and waved; subterminal line yellow defined on inner side by dark marks in the interspaces from below costa to vein 4 and towards inner margin, excurved below vein 7, then oblique, and slightly bent outwards to inner margin; a terminal series of dark lunules defined by a waved yellow line; cilia black at tips in the interspaces. Hind wing semihyaline yellowish white.

Hab. Colombia, Monte Tolima (*Fassl*), type † ♀ in Coll. Dognin, ♂ in Coll. Rothschild. *Exp.* ♂ 50, ♀ 62 millim.

8214. Lichnoptera spissa. (Plate CCXXXV. fig. 19.)

Dipthera spissa, H. Edw. Ent. Am. iii. p. 92 (1887).

♂. Head and thorax sulphur-yellow; antennæ blackish; palpi black at sides except in front; tegulæ with black band near tips; patagia with black patch at base and three oblique bars towards tips; prothorax with pair of black spots, the meso- and metathorax with black patches; a black streak below the wings, the tibiæ and tarsi banded with black; abdomen black-brown, the ventral surface pale yellow with subterminal series of small black spots. Fore wing sulphur-yellow thickly irrorated with fuscous black; small black spots at base of costa and vein 1; a sinuous subbasal striga from costa and small spot below the cell; antemedial line double, blackish filled in with yellow, waved, the outer line with black spot at costa; orbicular a small black annulus with yellow centre; reniform a yellow lunule defined on inner side by black, a small yellow spot before it and streak from it to the postmedial line; a small black spot at middle of costa and waved line from cell to inner margin; a yellow streak in submedian fold on medial area; postmedial line yellow with small black spot at costa, strongly bent outwards below costa and incurved below vein 4, the costa beyond it yellow with black points; subterminal line yellow, obliquely downcurved from costa to vein 7, then oblique and forming slight dentate yellow marks on its inner side; a terminal series of triangular black spots defined by yellow; cilia chequered black and yellow. Hind wing semihyaline whitish tinged with fuscous, the inner area clothed with fuscous hair; cilia chequered white and fuscous; the underside with medial and postmedial blackish marks on costa.

Hab. Mexico, Jalapa, 1 ♂; Peru, Carabaya, Limbani (*Ockenden*), in Coll. Rothschild. *Exp.* 48 millim.

8215. Lichnoptera marmorifera. (Plate CCXXXV. fig. 20.)

Diphtera marmorifera, Wlk. xxxii. 612 (1865).

♂. Head and thorax white tinged with yellow; antennæ black; palpi with black patch at side of 2nd joint; frons black at sides and with black band mixed with white above; tegulæ with black band mixed with white at middle; patagia with black patches at base

and middle and black tips; prothorax with black patch, the meso- and metathorax with paired oblique black bars; pectus white mixed with blackish; legs black, the tibiæ and tarsi with slight pale rings; abdomen black with broad subdorsal fulvous yellow fasciæ, the anal tuft and ventral suface with white mixed. Fore wing white tinged with yellow and almost entirely suffused with blackish except on costal half to beyond the cell; a curved black streak from costa near base to base of cell and a small spot on median nervure; antemedial line double, black filled in with whitish, waved, the outer line with oblique black bar from costa, the inner line with dentate mark in cell; orbicular with strong black annulus, round; reniform defined by black, elliptical with small black spot in centre; medial line black, waved, excurved at middle; postmedial line strong, double, black filled in with whitish, excurved from below costa to vein 6, then waved, incurved below vein 4, some small black spots beyond it on costa; subterminal line yellowish white defined on inner side by black, slightly incurved to vein 6, then somewhat dentate and more strongly angled inwards below vein 3; a terminal series of triangular black spots defined by a waved whitish line with a blackish band before it interrupted below veins 7 and 4; cilia chequered black and yellowish white. Hind wing semihyaline white with a slight black bar at tornus; the underside with black discoidal spot, medial, postmedial, and subterminal bars from costa, and the extremities of veins 7 to 2 streaked with black.

Hab. Colombia (*Marks*), 1 ♂ type. *Exp.* 46 millim.

*8216. **Lichnoptera atrifrons.** (Plate CCXXXV. fig. 21.)

Lichnoptera atrifrons, Dogn. Hét. Nouv. Am. Sud, vi. p. 16 (1912).

♀. Head and thorax white; antennæ black except towards base and with black band between their bases; frons irrorated with blackish; palpi black; tegulæ with black band; patagia with black spots at base and middle and black tips; pro-, meso-, and metathorax with paired black spots; pectus black-brown; legs banded black and white; abdomen black-brown irrorated with a few whitish scales and with dorsal series of slight white spots, yellow lateral streaks except towards extremity. Fore wing pure white; a black spot at base of costa, a curved subbasal black striga from costa and spot below the cell; antemedial area with an oblique sinuous blackish band formed by spots in and below the cell and above and below vein 1; antemedial line black, oblique towards costa, then waved, some red-brown between it and the medial line above vein 1 and some striæ above inner margin; orbicular a black annulus; reniform a small lunule defined by black, two black spots above it on costa and an oblique waved line from it to inner margin; some red-brown suffusion in end of cell and between veins 3 and 2 to the subterminal line; two slight lines and a small black spot beyond end of cell; a blackish patch on postmedial part of costal area with some white points on costa, the postmedial line arising from it,

double, waved, oblique below vein 4, some reddish brown beyond it at middle; subterminal line black, waved, strongly at veins 4, 3; a blackish patch on costal area before apex, and a somewhat dentate line before termen from vein 6 to tornus; a terminal series of black lunules. Hind wing black-brown with slight whitish marks on termen. Underside of both wings black-brown; fore wing with a series of small dentate white marks before termen.

Hab. Colombia, San Antonio (*Fassl*), type † ♀ in Coll. Dognin. *Exp.* 54–64 millim.

*8217. Lichnoptera mœstoides. (Plate CCXXXVI. fig. 12.)

Lichnoptera mœstoides, Dogn. Hét. Nouv. Am. Sud, vi. p. 15 (1912).

♀. Head and thorax pure white; antennæ black except towards base, and with a black bar between their bases; palpi black except extremity of 2nd joint; tegulæ with black band at middle; patagia with black spots at base and middle; pro-, meso-, and metathorax with paired black spots; pectus black-brown in front; legs banded with black; abdomen black-brown slightly irrorated with whitish, lateral yellow streaks except towards extremity. Fore wing pure white; a black spot at base of costa; a subbasal black striga from costa and small spot below the cell; the antemedial area with short black streak below costa before the antemedial line, small spot in cell, and obliquely placed spots above and below vein 1; antemedial line black, oblique and sinuous to submedian fold, then incurved and excurved above inner margin, the area between it and the medial line filled in with red-brown below submedian fold; orbicular a black annulus; medial line black, angled outwards below costa and lower angle of cell, then oblique, sinuous; a small black spot just beyond the cell; the lower extremity of cell and the area between veins 4 and 2 suffused with red-brown to beyond the postmedial line, which is formed by a spot on costa, streak above vein 6, spots above and below vein 5, then oblique, waved, incurved below vein 2 and excurved below submedian fold, some red-brown marks beyond it at middle and small black spots on costa; subterminal line black, waved, interrupted, excurved below vein 7 and at middle; a black patch on costal area before apex and dentate marks on veins 5 to 2; cilia chequered black and white. Hind wing fuscous brown, the inner margin yellow except towards tornus; some slight white marks on medial part of termen; cilia with series of white spots. Underside of fore wing suffused with fuscous brown except the terminal area from below apex; hind wing with indistinct sinuous whitish postmedial band ending at tornus and subterminal series of spots.

Hab. Peru, Carabaya, S. Domingo, type † ♀ in Coll. Dognin. *Exp.* 58 millim.

8218. Lichnoptera mœsta. (Plate CCXXXVI. fig. 13.)

Lichnoptera mœsta, Herr.-Schäff. Aussereur. Schmett. f. 530 (1850); Kirby, Cat. Lep. Het. p. 213.

♀. Head and thorax white; antennæ black with a black bar between their bases; palpi black, the extremities of 2nd and 3rd joints white; tegulæ black at base and with black patches at middle; patagia with black patches at base and middle and black tips; prothorax with black patch, metathorax with curved black streaks; pectus black; tibiæ and tarsi banded black and white; abdomen black irrorated with white and with lateral yellow streaks except towards extremity. Fore wing white; a small black spot at base of costa; a curved black subbasal striga from costa connected with a small spot on median nervure; the antemedial area with an oblique black bar from costa and spots in cell and above vein 1 and inner margin; antemedial line stronger at costa, slightly angled outwards below costa, incurved below submedian fold and excurved above inner margin, the area between it and the medial line filled in with purplish brown below submedian fold; orbicular with round black annulus; reniform defined by black except above, its centre with small elliptical black annulus; medial line black, obsolescent and purplish brown at middle, slightly bent outwards in the cell, incurved below vein 2 and excurved at vein 1, a small black spot beyond it on costa; the area below end of cell suffused with purple-brown; postmedial line double, black, the inner line purple-brown at middle and forming a small black patch below the costa, the outer line forking at costa, obliquely excurved from below costa to vein 6, then dentate, incurved at discal fold and below vein 4, sinuous below vein 2, the area between it and the subterminal line suffused with purple-brown except towards costa and inner margin; subterminal line black, oblique and sinuous from costa to vein 6, then waved; a series of rather dentate black marks before termen, the mark below apex lunulate; cilia chequered black and white. Hind wing uniform black-brown. Underside black-brown; fore wing with some white marks on postmedial part of costa and subterminal and terminal series of white spots; hind wing with slight white discoidal spot and slight mark formed by white scales before termen.

♂. Hind wing with the inner margin fringed with yellow hair.

Hab. Venezuela (*Prittwitz*), 1 ♀, ♂ in Coll. Rothschild. *Exp.* ♂ 44, ♀ 50–64 millim.

Genus **ELYDNODES**, nov.

Type, *E. variegata.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd short, thickly scaled; frons smooth; eyes large, round; antennæ of male ciliated; thorax clothed with hair and scales mixed, the metathorax with small paired crests, the patagia with long spatulate scales at extremities; tibiæ moderately fringed with hair; abdomen without crests. Fore wing with the apex produced and falcate, the termen excised to vein 4 where it is excurved, then oblique to tornus; veins 3 and 5

from near angle of cell: 6 from upper angle; 9 from 10 anastomosing with 8 to form a long narrow areole; 11 from cell. Hind wing with the cell nearly half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

8219. Elydnodes variegata.

Carea variegata, Leech, Trans. Ent. Soc. 1900, p. 524.

Head, thorax, and abdomen pale red-brown with some white on vertex of head, tips of tegulæ, and sides of thorax. Fore wing whitish suffused with pale red-brown, the basal and costal area and a patch at middle of terminal area browner; some pure white at base of inner area; a chocolate-brown subbasal striga from costa and small patch in and below the cell; antemedial line chocolate-brown defined on inner side by whitish, incurved from costa to near inner margin, above which it runs outwards to near the postmedial line; orbicular a white point defined by rufous; reniform faintly defined by rufous; postmedial line chocolate-brown and very oblique from just beyond upper extremity of reniform to above vein 4,

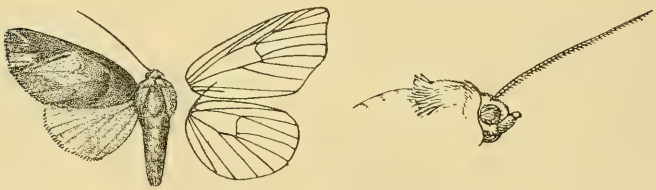


Fig. 101.—*Elydnodes variegata*, ♂. ½.

defined below by a white fascia which extends to termen on vein 4, the line then very indistinct, pale red-brown, very oblique and waved to submedian fold, then bent outwards to inner margin; an oblique bright rufous fascia from apex to the postmedial line defined on inner side by white towards apex and crossed by slight white streaks on the veins, a triangular yellowish patch below it defined below by a rufous streak above the white fascia at vein 4; a triangular yellowish mark on termen above tornus; terminal line rufous towards apex, darker towards tornus; cilia rufous intersected with white at the veins. Hind wing pale yellow; dark points on termen at veins 3 and 2. Underside of fore wing yellowish with brown discoidal spot, oblique fascia from apex, and patch at middle of terminal area; hind wing ochreous whitish.

Hab. W. China, Chia-kou-ho (*Pratt*), 1 ♂ type, Kia-ting-fu, 1 ♀. *Exp.* ♂ 44, ♀ 46 millim.

Species omitted.

Graphiphora lichenodes, Græs. Berl. Ent. Zeit. 1892, p. 216; Staud. Cat. Lep. pal. p. 131. ? *Trisuloides* ..... E. Siberia.

Subfamily PHYTOMETRINÆ.

Proboscis fully developed except in *Episema*; palpi usually upturned, sometimes with tufts of hair on 2nd and 3rd joints, in *Episema* porrect; frons smooth, usually with large tuft of hair; eyes smooth, overhung by more or less developed cilia, sometimes small and elliptical; antennæ of male usually ciliated, rarely bipectinate, or serrate; thorax clothed with scales and hair mixed or with hair only, the meso- and metathorax usually with large divided crest; tibiæ sometimes with large tufts of hair and the 1st joint of tarsus sometimes with tuft of hair, the tibiæ typically not spined but in some genera all the tibiæ or the hind tibiæ only are spined; abdomen usually with dorsal crests on basal segments, those on 1st and 3rd segments large, sometimes with ridges of hair on basal segments, the males sometimes with large protrusible lateral tufts towards extremity or base, the species with this character having usually a comb of long spines on inner side of 1st joint of hind tarsi, apparently to assist in the protrusion of the tufts which are probably scent organs for attracting the females. Fore

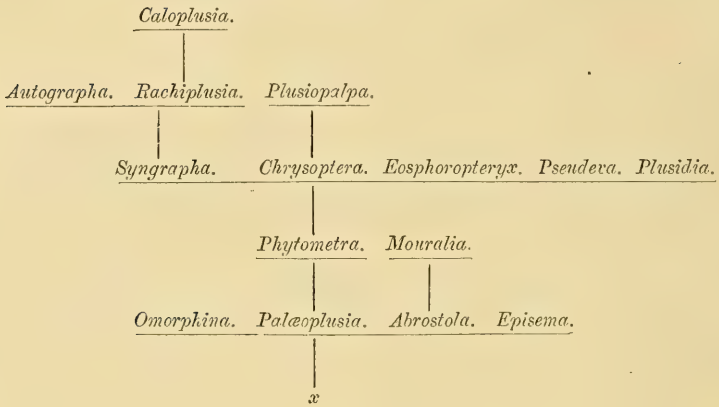
Fig. 102.—Larva of *Phytometra gamma*. $\frac{1}{1}$.

wing usually triangular with the apex somewhat produced, the termen usually evenly curved, but sometimes excised below apex and excurved at middle, the tornus usually with more or less developed scale-tooth, the inner margin sometimes excised towards tornus; in *Abrostola* and *Mouralia* there are small tufts of raised scales on upperside in and below the cell; vein 1 *a* weak, not anastomosing with 1 *b*; 1 *c* absent; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with veins 1 *a* and *b* present; 1 *c* absent; the cell about half the length of wing; veins 3 and 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

The *Phytometrinæ* form a small, well characterised and very natural subfamily except perhaps the genus *Episema* which is somewhat aberrant.

The *Larvæ* are typically semiloopers with the 1st two pairs of abdominal prolegs absent or in *Abrostola* small and non-functional, but *Episema* has larvæ with all the prolegs fully developed and not semiloopers.

Phylogeny of the Phytometrinæ.



Key to the Genera.

A. Tibiæ all spined.
  a. Eyes small, elliptical ..... Caloplusia, p. 405.
  b. Eyes large, round..... Rachiplusia, p. 410.
B. Hind tibiæ only spined.
  a. Eyes small, elliptical; fore wing without scale-tooth at tornus..... Autographa, p. 404.
  b. Eyes large, round; fore wing with scale-tooth at tornus ..... Syngrapha, p. 412.
C. Tibiæ not spined.
  a. Proboscis aborted, small ..... Episema, p. 593.
  b. Proboscis fully developed.
    a^1. Fore wing with small tufts of raised scales in and below the cell.
      a^2. Pro- and metathorax with spreading crests ..... Mouralia, p. 591.
      b^2. Meso- and metathorax with large divided crest..... Abrostola, p. 582.
    b^1. Fore wing without tufts of raised scales in and below the cell.
      a^2. Palpi with tuft of hair at extremity of 2nd joint behind, the 3rd joint fringed with hair in front and behind..... Plusiopalpa, p. 437.
      b^2. Palpi with the 3rd joint fringed with hair in front.
        a^3. Palpi with the 3rd joint long; fore wing with the termen typically evenly curved ..... Chrysoptera, p. 439.
        b^3. Palpi with the 3rd joint moderate; fore wing with the termen excurved below apex and excurved at middle... Pseudeva, p. 447.
      c^2. Palpi with the 3rd joint not fringed with hair.
        a^3. Abdomen with large dorsal crests on basal segments.
          a^4. Patagia dilated with scales at extremity ..... Plusidia, p. 450.

b^4. Patagia not dilated with scales at extremity.
a^5. Fore wing with the inner margin excised towards tornus..... Eosphoropteryx, p. 446.
b^5. Fore wing with the inner margin not excised towards tornus ..... Phytometra, p. 452.
b^3. Abdomen with ridges of hair on basal segments, but without crests.
a^4. Eyes small, elliptical ..... Omorphina, p. 403.
b^4. Eyes large, round ..... Palæoplusia, p. 581.

Genus **OMORPHINA.**

Type.
Omorphina, Alph. Hor. Soc. Ent. Ross. xxvi. p. 452 (1892)..... *aurantiaca.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and fringed with long hair in front, the 3rd moderate; frons smooth, with tuft of hair; eyes rather small and elliptical, overhung by long cilia; antennæ of male minutely ciliated; thorax clothed with hair only and without crests; tibiæ fringed with rather long hair; abdomen dorsally clothed with rough hair at base but without crests. Fore wing with the apex rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell, 6 from upper angle, 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

8220. **Omorphina aurantiaca.**

Omorphina aurantiaca, Alph. Hor. Soc. Ent. Ross. xxvi. p. 452 (1892); id. Rom. Mém. ix. p. 41, pl. i. f. 2; Staud. Cat. Lep. pal. p. 220.
Omorphina chrysostigma, Püng. Iris, xix. p. 223 (1906).

Head and thorax rufous; antennæ grey; palpi grey mixed with brown; tarsi grey; abdomen dark grey-brown with some rufous hair towards base of dorsum, the anal tuft rufous, the ventral surface grey. Fore wing rufous slightly tinged with greyish, the postmedial area somewhat paler; an indistinct brown antemedial

Fig. 103.—*Omorphina aurantiaca*, ♂. ½.

line, incurved in cell; orbicular and reniform indistinctly defined by brown, the former round, the latter narrow and elliptical; postmedial line indistinct, brown, excurved below costa, incurved at discal fold, incurved below vein 4 and excurved below submedian

fold; subterminal line brown, waved, excurved below vein 7 and at middle. Hind wing orange-yellow; the base and inner area black-brown; a black-brown discoidal lunule conjoined to the basal area; a narrow black-brown terminal band; cilia black-brown at base, yellow at tips. Underside of both wings orange-yellow with narrow black-brown terminal band; fore wing with elliptical discoidal spot; hind wing with discoidal point.

Ab. 1. *chrysostigma*. Fore wing with elongate yellow mark in lower part of cell.

Ab. 2. Fore wing with the markings more distinct; hind wing with the cilia deep red at base, pale red at tips.

Hab. Tibet, Kuku-noor, Amdo, Sining Alps, 1 ♂; Sikhim (*Tibet Exp.*), 2 ♂, 2 ♀. *Exp.* 22–28 millim.

Genus **AUTOGRAPHA**.

Type.

Autographa, Hübn. Verz. p. 251 (1827) ..... *parilis*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and fringed with rather long hair in front, the 3rd moderate; frons smooth with large tuft of hair; eyes rather small and elliptical, overhung by long cilia; antennæ of male ciliated; thorax clothed with hair and hair-like scales, the metathorax with divided crest; tibiæ moderately fringed with hair, the hind tibiæ spined between the mid and terminal spurs only; abdomen with dorsal crests on basal segments, the crests on 1st and 3rd segments large. Fore wing with the apex slightly produced, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from well above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

8221. **Autographa parilis.**

Noctua parilis, Hübn. Eur. Schmett., Noct. f. 422 (1808); Dup. Lép. Fr. Suppl. iv. p. 527, pl. 90. f. 6; Auriv. Bihang K. Svensk. Vet.-Akad. Handl. xv. 4, i. p. 17, pl. i. f. 6; Smith, Cat. Noct. N. Am. p. 256; Staud. Cat. Lep. pal. p. 240.

Plusia quadriplaga, Wlk. xii. 911 (1857).

Head, thorax, and abdomen purple-grey mixed with dark red-brown, the tegulæ with whitish line at middle and whitish tips, the patagia with whitish line near base; pectus, legs, and ventral surface of abdomen red-brown slightly mixed with grey, the tarsi slightly ringed with white; abdomen with the basal crest red-brown tipped with white. Fore wing purplish grey sparsely irrorated with black, the medial area below the cell very deep chocolate-brown; a subbasal whitish striga from costa; antemedial line white, strongly incurved in cell, then slightly excurved; orbicular indistinctly defined by whitish, rounded; an oblique silvery-white Y-shaped stigma below the cell, its arm filled in with purple-grey; reniform with slight white annulus, its centre defined by black-brown, strongly constricted at middle where

there is a small black-brown spot beyond it; postmedial line white slightly defined by brown, excurved below costa, then obliquely curved to lower angle of cell, then erect; subterminal line whitish defined on inner side by brown suffusion, slightly excurved below vein 7 and at middle, a brown shade beyond it from apex; a fine brown terminal line; cilia whitish intersected with brown at the veins. Hind wing grey-brown with a broad rather diffused white

Fig. 104.—*Autographa parilis*, ♂. ½.

postmedial band from costa to vein 1, expanding on inner side to the discocellulars, cilia white with a series of brown spots at base; the underside with the basal and terminal areas irrorated with grey, a slight black discoidal lunule.

Hab. GREENLAND; GRINNELLAND, Hayes Sound (*Fielden*), 1 ♀; FRAW IS. (*H.M.S. Investigator*), 1 ♂, 1 ♀ type *quadriplaga*; LABRADOR, Zeller, Frey, and Grote Colls., 4 ♀; CANADA, Br. Columbia, Mt. Athabasca (*Mrs. Nicholl*), 5 ♂, 2 ♀, Wilcox Peak (*Mrs. Nicholl*), 1 ♀; LAPLAND (*Crowe*), Zeller, Frey, and Leech Colls.; CENTR. SWEDEN, Mountains; FINLAND. *Exp.* 28–32 millim.

Genus **CALOPLUSIA.**

Type.

Caloplusia, Smith, Bull. Brooklyn Ent. Soc. vii. p. 68 (1884)... *hochenvarthi.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and fringed with rather long hair in front, the 3rd moderate; frons smooth with large tuft of hair; eyes rather small and elliptical, overhung by long cilia; antennæ of male ciliated; thorax clothed with hair and hair-like scales, the meso- and metathorax with divided crest; tibiæ moderately fringed with hair, all the tibiæ spined; abdomen with dorsal series of crests, the crests on 1st and 3rd segments large. Fore wing with the apex slightly produced, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the postmedial line slightly waved and excurved above inner margin.
  a. Hind wing deep orange ..... *virgula.*
  b. Hind wing pale yellow..... *devergens.*
B. Fore wing with the postmedial line not waved or excurved above inner margin.
  a. Fore wing with the stigma below the cell oblique V-shaped. *alticola*

b. Fore wing with the stigma below the cell Y-shaped.
*a*¹. Size smaller; fore wing with the stigma more acute at extremity; hind wing pale orange-yellow ..... *kochenvārthi*.
*b*¹. Size larger; fore wing with the stigma below the cell more rounded at extremity; hind wing deeper orange-yellow ..... *ignea*.

8222. **Caloplusia virgula**. (Plate CCXXXVI. fig. 1.)

Plusia virgula, Blanch. Gay's Chile, Zool. vii. p. 84 (1852).
Plusia certa, Wlk. xii. 920 (1857).
Triphæna signata, Phil. Linn. Ent. xiv. p. 293 (1860).

Head and thorax red-brown mixed with grey, the tegulæ with dark lines near base and at middle and whitish tips, the patagia with dark lines at middle and near tips defined behind by white; tarsi ringed with white; abdomen rufous irrorated with brown. Fore wing grey suffused with red-brown and slightly irrorated with black; subbasal line white defined at sides by red-brown and black, waved, from costa to vein 1, two short black streaks beyond it below the cell; antemedial line whitish defined at sides by brown and by black towards inner margin, angled outwards below costa, then strongly bent inwards, excurved above vein 1, a slight black streak before it below costa; orbicular with white annulus and its centre slightly defined by black, narrow, oblique; a silvery-white Y-shaped stigma defined by black below the cell, its tail short, bent outwards and somewhat dilated: reniform with slight white annulus defined by black at sides and its centre partly defined by black, constricted at middle; a faint dark medial line, oblique to lower angle of cell, then inwardly oblique; postmedial line double, red-brown filled in with whitish and defined on outer side by white, some black on its inner edge at vein 3 and on both sides at inner margin; excurved below costa, then oblique and minutely waved, somewhat excurved at middle, some white points beyond it on costa; subterminal line black defined on outer side by white towards inner margin, angled inwards at veins 5 and 2, excurved below vein 7 and angled outwards below veins 4 and 3; a fine white line before termen; cilia chequered red-brown and whitish. Hind wing deep orange: the base with short dark streaks on the veins; a terminal black-brown band with slightly waved inner edge; cilia brown at base, chequered brown and whitish at tips. Underside orange, the costal areas tinged and irrorated with red-brown, the terminal areas suffused with red-brown; fore wing with black discoidal striga.

Ab. 1. Fore wing with the stigma reduced to a V-mark.

Hab. Chili (*Cuming*, *Edmonds*), 3 ♀ type *certa*, Coquimbo (*J. J. Walker*), 2 ♀, Talcahuano (*J. J. Walker*), 1 ♂, 1 ♀, Mulchen (*Elwes*), 3 ♂, 1 ♂, Chilan (*Elwes*), 1 ♀. *Exp.* 28–30 millim.

Larva. Izquierdo, Notas, Lep. Chile, 1895, p. 30 (1896).

8223. Caloplusia devergens.

Noctua devergens, Hübn. Eur. Schmett., Noct. ff. 500–1 (1818); Dup. Lép. Fr., Suppl. iii. p. 492, pl. 42. f. 3; Staud. Cat. Lep. pal. p. 240.

Head and thorax dark brown mixed with grey; tegulæ with grey line at middle and grey tips; patagia with grey bar at middle and grey tips; abdomen dark brown, the crests tipped with grey. Fore wing grey tinged with reddish brown and irrorated with dark brown, the medial area below the cell suffused with dark brown; subbasal line whitish defined at sides by dark brown, waved, from costa to vein 1; antemedial line whitish defined at sides by dark brown, curved, incurved in cell; orbicular with whitish annulus and its centre defined by dark brown, small, oblique elliptical; an oblique white Y-shaped stigma below the cell; reniform with whitish annulus and dark brown marks in its upper extremity and lower part, constricted at middle and with dark brown marks before and beyond it; postmedial line white defined at sides by dark brown, slightly waved, excurved to vein 5, then oblique, some minute white points beyond it on costa; subterminal line dark brown defined on outer side by whitish, slightly waved, excurved below veins 7 and 6 and angled outwards below veins 4 and 3; a fine white line just before termen from apex to vein 2; cilia chequered brown and grey. Hind wing orange-yellow; the base and inner margin dark brown; a slight brown discoidal bar; traces of a postmedial series of brown points on the veins usually present; a black-brown terminal band, its inner edge incurved at vein 2; cilia dark brown at base, chequered brown and white at tips. Underside yellow, the fore wing and costal area of hind wing slightly irrorated with brown, the terminal areas suffused with brown; fore wing with small brown discoidal spot, the hind wing with discoidal striga.

Hab. ? Labrador: Switzerland. Zeller. Frey. and Leech Colls., Engadine, Frey Coll.; Lapland. Leech Coll.; W. Turkestan, Kisil-Art, Ala Tau, Pamirs. *Exp.* 32 millim.

Larva. Kirby, Butt. & Moths Eur. p. 272; Hffm. Raup. p. 136.

Dark violet with pale grey lateral lines. Food-plants: *Silene acaulis*, *Viola*, *Geum*. 7–8.

8224. Caloplusia alticola. (Plate CCXXXVI. fig. 2.)

Plusia alticola, Wlk. xii. 912 (1857); Smith, Cat. Noct. N. Am. p. 258.

Head, thorax, and abdomen dark reddish brown mixed with grey. Fore wing grey suffused with red-brown and slightly irrorated with black, the medial area below the cell deep red-brown: subbasal line greyish defined on each side by dark brown, curved, from costa to submedian fold: antemedial line grey defined on each side by dark brown, strongly incurved in cell, then excurved; orbicular with whitish annulus and its centre defined by black, small, oblique elliptical: a small narrow oblique V-shaped silvery-

white stigma below the cell; reniform with slight whitish annulus and slight black marks in its extremities, constricted at middle where there is a small black spot beyond it; postmedial line whitish defined on each side by dark brown, excurved to vein 4, then incurved, some whitish beyond it and some white points on costa; subterminal line whitish defined on inner side by dark brown, excurved below vein 7, angled outwards below vein 4 and slightly excurved below vein 3; a dark brown line just before termen from costa to vein 2 and a fine lunulate terminal line; cilia grey chequered with brown and with slight brown line near base. Hind wing orange-yellow, the basal, inner, and terminal areas dark reddish brown; cilia grey chequered with brown and with brown line near base. Underside of both wings orange-yellow, the fore wing and costal and inner areas of hind wing irrorated with brown, the terminal areas brown, slight discoidal lunules, and a postmedial line extending on fore wing to vein 2, on hind wing on costal area only.

Hab. CANADA, Alberta, Rocky Mts. (*Lord Derby*), 1 ♂ type, Kiking Horse Pass, Mt. Hector (*Mrs. Nicholl*), 1 ♂, Br. Columbia, Mt. Assiniboine (*Mrs. Nicholl*), 1 ♀, Wilcox Pass (*Mrs. Nicholl*), 2 ♂, Brobokton Creek (*Mrs. Nicholl*), 1 ♂, Brazeau Creek (*Mrs. Nicholl*), 1 ♀. *Exp.* 28–30 millim.

8225. Caloplusia hochenvarthi.

Phalæna hochenwarthi, Hochenw. Schrift. Berl. Ges. Naturf. Freunde, vi. p. 337, pl. 7. f. 2 (1785); Esp. Schmett. iv. pl. 179. f. 3; Smith, Cat. Noct. N. Am. p. 258; Staud. Cat. Lep. pal. p. 239.
Noctua divergens, Fabr. Mant. Ins. ii. p. 162 (1787); Hübn. Eur. Schmett., Noct. f. 286 (1802); Dup. Lép. Fr. vii. 2, p. 56, pl. 138. f. 3; Meig. Syst. Besch. iii. p. 259, pl. 122. f. 12.
Plusia tibetana, Staud. Iris, viii. p. 329 (1895).
Plusia alaica, Galvagni, Verh. zool.-bot. Ges. Wien, lvi. p. 82 (1906).

Head and thorax bright red-brown slightly mixed with grey; tegulæ and patagia with slight whitish medial line and whitish tips; pectus, legs, and abdomen grey-brown, the last with the crests bright rufous with grey tips, the anal tuft rufous. Fore wing grey suffused with bright rufous and slightly irrorated with dark brown, the inner medial area deep rufous; subbasal line whitish, from costa to vein 1; antemedial line silvery-whitish, angled outwards below costa, strongly incurved in cell, then obliquely curved; orbicular with slight whitish annulus, small, oblique elliptical; an oblique silvery-white Y-shaped stigma below the cell; reniform with slight silvery-white annulus and minute black spots in its extremities, constricted at middle where there is a black spot beyond it; postmedial line double, red-brown filled in with whitish, excurved below costa and incurved below vein 4; subterminal line dark red-brown defined on inner side by red-brown suffusion, excurved below vein 7, excurved and slightly waved at middle; a curved red-brown line before termen, the termen bluish grey with a fine red-brown terminal line; cilia with a maculate

brown line near base. Hind wing orange-yellow, the base and inner margin red-brown; a dark brown terminal band; cilia brown at base, chequered brown and whitish at tips. Underside orange-yellow, the fore wing and costal area of hind wing irrorated with

Fig. 105.—*Caloplusia hochenwarthi*, ♂. ½.

brown, the terminal areas suffused with brown; fore wing with dark discoidal lunule, postmedial line excurved beyond the cell, and subterminal shade; hind wing with dark discoidal striga.

Ab. 1. *tibetana*. Larger.

Ab. 2. *alaica*. Fore wing with the stigma below the cell smaller; hind wing tinged with deep orange.

Hab. Labrador, 1 ♀, Zeller Coll.; U.S.A., New Hampshire, White Mts.; Switzerland, Zeller, Frey, and Leech Colls., Engadine, Frey Coll.; Greece, Leech Coll.; Scandinavia, Finmark (*Hampson*), Lapland, Zeller and Leech Colls.; Armenia; W. Turkestan, Ferghana, Issyk-Kul, Ala Tau, Tarbagatai; W. Siberia, Altai; E. Turkestan, Thian Shán Mts.; Tibet, Amdo; E. Siberia, Amurland, 2 ♂; Kashmir, Skora-la (*Leech*), 3 ♀, Kardong (*McArthur*), 1 ♂, 3 ♀, Rupshu, Tagalung-la (*Avinoff*), 1 ♀, Nubra Valley, Shayok R. (*Avinoff*), 1 ♂, Panomik (*Avinoff*), 2 ♀. *Exp.* 26–34 millim.

Larva. Kirby, Butt. & Moths Eur. p. 272; Hffm. Raup. p. 135.

Reddish brown with yellowish lines on the back and sides with indistinct waved lines between them. Food-plants, low growing *Umbelliferæ*. 7.

8226. **Caloplusia ignea.** (Plate CCXXXVI. fig. 3.)

Plusia ignea, Grote, Proc. Ent. Soc. Phil. ii. p. 274 (1863); Smith, Cat. Noct. N. Am. p. 258.

Head and thorax bright red-brown mixed with some grey, the tegulæ and patagia with grey lines at middle and grey tips, the metathoracic crest tipped with grey; palpi, pectus, legs, and abdomen grey mixed with brown, the last with the crests red-

brown. Fore wing grey suffused with red-brown and slightly irrorated with blackish, the medial area below the cell deep red-brown; subbasal line double, whitish, waved, from costa to vein 1; antemedial line whitish, strongly incurved in the cell, then obliquely curved; orbicular with slight whitish annulus, small, oblique elliptical; an oblique silvery-white **Y**-shaped stigma below the cell; reniform with slight whitish annulus, constricted at middle where there is a black-brown spot beyond it; postmedial line double, red-brown filled in with whitish, excurved below costa and oblique below vein 5; subterminal line dark brown, excurved below vein 7 and slightly below veins 4 and 3; a curved red-brown line before termen with the area beyond it whitish grey. Hind wing orange-yellow, the base and inner margin red-brown; a terminal black-brown band; cilia brown at base, chequered brown and white at tips. Underside orange-yellow, the costal areas irrorated with brown, the inner area of fore wing and terminal area of both wings suffused with brown; fore wing with brown discoidal lunule and indistinct postmedial line excurved beyond the cell.

Hab. CANADA, Alberta, Calgary (*Wolley-Dod*), 2 ♂; U.S.A., Utah (*Barnes*), 2 ♂, 1 ♀, Colorado (*Bruce*), 1 ♂, 1 ♀, South Park (*Oslar*), 2 ♂, Pehe's Peak, 2 ♀, Hall Valley, New Mexico, Jaos, 1 ♂, Truckas Peak (*Cockerell*), 1 ♂, 1 ♀. *Exp.* 34–36 millim.

Genus **RACHIPLUSIA**, nov.

Type, *R. nu.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and fringed with rather long hair in front, the 3rd rather long; frons smooth with large tuft of hair; eyes large, round, overhung by long cilia; antennæ of male minutely ciliated; thorax clothed with hair and hair-like scales, the meso- and metathorax with large divided crest; tibiæ fringed with rather long hair, all the tibiæ spined; abdomen with dorsal series of crests, the crests on 1st and 3rd segments large. Fore wing with the apex rounded, the termen evenly curved and slightly crenulate, the tornus with scale-tooth; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the stigma **Y**-shaped, or **U**-shaped with a spot beyond it; hind wing tinged with cupreous red ..... *nu.*
B. Fore wing with the stigma **U**-shaped without spot beyond it; hind wing not red ..... *pedalis.*

8227. Rachiplusia nu.

Plusia nu, Guen. Noct. ii. p. 347 (1852).
Plusia depauperata, Blanch. Gay's Chile, Zool. vii. p. 85 (1852).
Plusia detrusa, Wlk. xii. 918 (1857).
Plusia fumifera, Wlk. xii. 919 (1857).
Plusia atrata, Giacom. Ann. Soc. Arg. lxxii. p. 38 (1911).

Head and thorax red-brown slightly mixed with whitish, the tegulæ with slight dark medial line; abdomen pale rufous. Fore

wing greyish suffused with red-brown with a golden cupreous gloss, the medial area with a darker patch below the cell; subbasal line represented by two faint brown striæ from costa and a curved blackish mark below the cell; antemedial line indistinct, double, red-brown, excurved above vein 1; orbicular indistinctly defined by whitish except above, oblique and rather quadrate; an oblique silvery Y-shaped stigma below the cell, its tail hardly dilated; reniform with indistinct pale outline with slight brown marks beyond it and in its lower part, constricted at middle; an oblique brown shade from costa to lower angle of cell and traces of an

Fig. 106.—*Rachiplusia nu*, ♂. ½.

oblique sinuous line on inner area; postmedial line indistinct, double, red-brown, bent outwards below costa, then oblique and minutely waved, somewhat angled inwards at vein 2, some whitish points beyond it on costa; subterminal line dark with an oblique cupreous brown shade from apex to it at vein 7 then defining its inner side, the line bent outwards at vein 7, angled inwards at discal fold and excurved below veins 4 and 3; a terminal series of brown striæ; cilia intersected with brown at the veins. Hind wing whitish suffused with cupreous red-brown, the terminal area cupreous red-brown; cilia whitish with a red-brown line near base.

Ab. 1. Fore wing with the stigma consisting of a U-shaped mark with spot beyond its lower extremity, sometimes much reduced.

Ab. 2. *atrata*. Fore wing nearly uniformly suffused with blackish.

Hab. Paraguay, Sapucay (*Foster*), 1 ♀; Uruguay (*Darwin*), 1 ♂ type *detrusa*; Argentina, Goya (*Perrins*), 2 ♀, Buenos Ayres (*O. Thomas, Wilkinson*), 1 ♂, 3 ♀, Rioja (*Giacomelli*), 1 ♂; Chili (*Cuming, Edmonds*), 2 ♂ type *fumifera*, Callao (*J. J. Walker*), 1 ♂, Coquimbo (*J. J. Walker*), 5 ♂, Chillan (*Elwes*), 1 ♀. *Exp.* 30–36 millim.

Larva. Izquierdo, Notas, Lep. Chile, 1895, p. 47 (1896).

Food-plant, *Erigeron*.

8228. **Rachiplusia pedalis.** (Plate CCXXXVI. fig. 4.)

Plusia pedalis, Grote, Can. Ent. vii. p. 204 (1875); Smith, Cat. Noct. N. Am. p. 252.

♀. Head, thorax, and abdomen brown mixed with grey; tarsi ringed with white. Fore wing brown mixed with grey, slightly irrorated with black and with a golden gloss; subbasal line dark brown defined on outer side by whitish, sinuous, from costa to submedian fold; antemedial line indistinctly double, brown filled in with whitish, excurved below costa and above vein 1; an oblique U-shaped silvery stigma defined by blackish below the cell; reniform faintly defined by whitish, very narrow and strongly constricted at middle, with slight blackish points in its extremities; postmedial line brown defined on each side by whitish, bent outwards below costa, then minutely waved and oblique, slightly angled inwards at vein 2, some white points beyond it on costa; subterminal line brown defined on outer side by whitish, slightly angled outwards at veins 7, 6 and below veins 4, 3, ending at tornus; a terminal series of small brown lunules defined by a waved whitish line; cilia chequered brown and whitish. Hind wing brown; cilia white with a brown line near base; the underside tinged with grey and with an indistinct postmedial line.

Hab. U.S.A., Kansas, 1 ♀ type. *Exp.* 42 millim.

Genus **SYNGRAPHA.**

Type.

Syngrapha, Hübn. Verz. p. 250 (1827) .... *ain.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and moderately fringed with hair in front, the 3rd moderate; frons smooth, with large tuft of hair; eyes large, round; antennæ of male ciliated; thorax clothed with hair and hair-like scales, the metathorax with large divided crest; tibiæ slightly fringed with hair, the hind tibiæ spined between the medial and terminal spurs only; abdomen with dorsal crests on basal segments, the crests on 1st and 3rd segments large. Fore wing typically with the apex hardly produced, the termen obliquely curved, crenulate, the tornus with scale-tooth, veins 3 and 5 from close to angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Fore wing with the apex not produced, the termen not excised below it.

A. Hind wing yellow.
  a. Fore wing with the stigma below the cell oblique Y-shaped, rarely V-shaped.
    a[1]. Fore wing with the subterminal line angled outwards below veins 4 and 3..... *ain.*
    b[1]. Fore wing with the subterminal line slightly excurved below veins 4 and 3 .... *microgamma.*
  b. Fore wing with the stigma below the cell U-shaped, sometimes with a streak beyond its lower extremity.

a^1. Fore wing with the postmedial line not excurved below submedian fold and without yellow beyond it at tornus.
a^2. Fore wing with the medial area below the cell dark chocolate-brown ..... *orophila.*
b^2. Fore wing with the medial area below the cell deep rufous except towards inner margin ..... *diasema.*
b^1. Fore wing with the postmedial line excurved below submedian fold and with some yellow beyond it at tornus.
a^2. Fore wing with the orbicular absent, the U-shaped stigma somewhat pointed below ..... *sacceni.*
b^2. Fore wing with the orbicular present, the U-shaped stigma rounded below ..... *snovi.*
B. Hind wing not yellow.
a. Fore wing with the stigma below the cell Y-shaped.
a^1. Fore wing with the stigma narrow, its tail broad *falcifera.*
b^1. Fore wing with the stigma narrow, its tail short and pointed ..... *simplicissima.*
c^1. Fore wing with the stigma broad, its tail lobed..... *speciosa.*
d^1. Fore wing with the stigma broad, its tail slender . *epigæa.*
b. Fore wing with the stigma below the cell irregular, erect V- or U-shaped, often with a spot beyond it or attached to its outer edge.
a^1. Fore wing with the stigma greenish silvery.
a^2. Fore wing with the V-shaped stigma irregular, the medial area below the cell concolorous..... *selecta.*
b^2. Fore wing with the V-shaped stigma more regular, the medial area below the cell darker . *celsa.*
b^1. Fore wing with the stigma not greenish silvery.
a^2. Fore wing with the terminal area more or less suffused with silvery-white.
a^3. Fore wing with the orbicular entirely or almost entirely filled in with silvery-white ... *rectangula.*
b^3. Fore wing with the orbicular not filled in with silvery-white.
a^4. Fore wing with claw-shaped projection from middle of the outer edge of the stigma ... *alias.*
b^4. Fore wing with spot beyond the stigma ... *u-aureum.*
b^2. Fore wing with the terminal area not suffused with silvery-white.
a^3. Fore wing with the medial area below the cell concolorous.
a^4. Hind wing reddish ochreous more or less suffused with brown at base and with the terminal area dark brown.
a^5. Fore wing with the stigma below the cell broad irregular U-shaped.
a^6. Fore wing with the stigma silvery-white ..... *octoscripta.*
b^6. Fore wing with the stigma golden ..... *arctica.*
b^5. Fore wing with the stigma below the cell narrow and more V-shaped.
a^6. Fore wing with the lower extremity of the stigma bent outwards ..... *excelsa.*
b^6. Fore wing with the lower extremity of the stigma bent inwards..... *angulidens.*
b^4. Hind wing with the basal half dark brown with a narrow reddish ochreous band between it and the dark terminal area..... *pyrenaica.*

b^3. Fore wing with the medial area below the cell deep chocolate-brown.
a^4. Fore wing with the stigma below the cell narrow and V-shaped.
a^5. Fore wing with the postmedial area suffused with dark brown ..... *altera.*
b^5. Fore wing with the postmedial area not suffused with dark brown .... *v-alba.*
b^4. Fore wing with the stigma below the cell broad and V-shaped ..... *surena.*
c^4 Fore wing with the stigma below the cell broad and more U-shaped ..... *interrogationis.*
c. Fore wing with the stigma below the cell oblique V-shaped.
a^1. Fore wing with the stigma narrow..... *grœnlandica.*
b^1. Fore wing with the stigma broad ..... *circumflexa.*

8229. Syngrapha ain.

Noctua ain, Hochenw. Schrift. Berl. Ges. Naturf. Freunde, vi. p. 337, pl. vii. f. 8 (1785); Esp. Schmett. iv. pl. 179, f. 4 (1794); Hübn. Eur. Schmett., Noct. f. 290 (1802); Dup. Lép. Fr. vii. 2, p. 53, pl. 138. f. 1; Staud. Cat. Lep. pal. p. 239.

Head and thorax purple-grey mixed with dark brown; tegulæ with two dark lines towards tips which are white; patagia with two whitish bars; tarsi ringed with white; abdomen grey-brown, the crests black tipped with white. Fore wing purple-grey suffused in parts with brown and irrorated with black, the medial area with some deep brown suffusion below the cell; subbasal line double,

Fig. 107.—*Syngrapha ain*, ♂. ½.

black-brown filled in with white, waved, from costa to vein 1; antemedial line double, black-brown filled in with silvery-white, excurved below costa, incurved in cell, then oblique and sinuous; orbicular with brown centre and whitish annulus, oblique, elliptical; an oblique silvery-white Y-shaped stigma below the cell; reniform

with slight white annulus defined at sides by black-brown and its centre defined by black-brown, constricted at middle; a dark brown medial shade, oblique to lower angle of cell, then inwardly oblique; postmedial line double, dark-brown filled in with silvery-white, bent outwards below costa, oblique and sinuous below vein 6, some white points with dark streaks between them beyond it on costa; subterminal line black-brown defined on inner side by brown suffusion, excurved below vein 7 and angled outwards below veins 4 and 3; a waved dark terminal line defined on inner side by whitish; cilia chequered brown and grey. Hind wing yellow, the basal and inner areas suffused with brown, the terminal area dark brown; cilia chequered white and brown; the underside with the basal and costal areas irrorated with brown, a slight brown discoidal lunule and curved postmedial line.

Hab. Germany, Alps, Zeller Coll.; Austria, Carinthia, Zeller Coll.; Hungary; Switzerland, Zeller, Frey, and Leech Colls.; N. Italy, Courmayeur (*Hampson*); W. Turkestan, Tarbagatai Mts.; W. Siberia, Altai; E. Siberia, Dahuria, Amurland, 1 ♂, 1 ♀. *Exp.* 34–42 millim.

Larva. Kirby, Butt. & Moths Eur. p. 272; Hffm. Raup. p. 135.

Green with fine yellow longitudinal lines. Food-plant, Larch. 4–5.

8230. Syngrapha microgamma.

Noctua microgamma, Hübn. Eur. Schmett., Noct. ff. 698–9 (1823); Dup. Lép. Fr. vii. 2, p. 55, pl. 138. f. 2; Staud., Cat. Lep. pal. p. 239.
Plusia incompleta, Reuter, Act. Fauna Flora Fenn. ix. p. 59 (1893).

Head and thorax red-brown mixed with grey; tegulæ whitish at tips, the patagia with oblique whitish line at middle and whitish tips, the thoracic crest whitish at tips; tarsi ringed with white; abdomen grey-brown, the crests dark brown tipped with white. Fore wing purple-grey slightly irrorated with black, the medial area below the cell and the terminal area suffused with cupreous red-brown; subbasal line double, blackish filled in with white, excurved below costa and ending at vein 1; antemedial line blackish defined on inner side by silvery-white, excurved below costa, strongly incurved in cell, then oblique and sinuous; orbicular with faint whitish annulus, oblique elliptical; an oblique silvery-white Y-shaped stigma below the cell, its tail dilated into a spot; reniform with slight silvery annulus defined on inner side by black, its centre with some black at extremities, constricted at middle where there is a black spot beyond it; postmedial line double, red-brown, filled in with silvery-whitish towards inner margin, bent outwards below costa, then minutely waved to vein 5, then slightly incurved and sinuous, some white points beyond it on costa; subterminal line brown, excurved below vein 7 and slightly below veins 4 and 3; a brown terminal line defined on inner side by a fine grey line; cilia chequered greyish and brown. Hind wing yellow, the base and inner margin suffused with brown, the terminal area dark red-brown,

cilia brown at base, chequered white and brown at tips; the underside with the costal and terminal areas suffused with red-brown, a slight discoidal lunule.

Ab. 1. Fore wing with the stigma V-shaped.

Hab. N.E. Germany; Austria, Tirol; Scandinavia, Lapland, Leech Coll.; Finland, Leech Coll.; Russia, Livonia, Zeller Coll., St. Petersburg, Zeller, Frey, & Leech Colls.; ? Balkan States. *Exp.* 30–32 millim.

Larva. Kirby, Butt. & Moths Eur. p. 272; Hffm. Raup. p. 299.

Violet slightly irrorated with white, and with yellow lateral line. Food-plant, *Salix*. 4–5.

8231. Syngrapha orophila. (Plate CCXXXVI. fig. 5.)

Autographa diasema, Ottolengui, J. N.Y. Ent. Soc. x. pl. viii. f. 6 (nec Boisd.).

Plusia orophila, Hmpsn. Can. Ent. xl. p. 105 (1908).

Head and thorax blue-grey mixed with brown; tarsi dark brown ringed with white; abdomen grey dorsally suffused with brown, ventrally irrorated with brown. Fore wing blue-grey slightly irrorated with black, the medial area below the cell very deep chocolate-brown; subbasal line slight, blackish, sinuous, from costa to vein 1; antemedial line blackish defined on inner side by whitish, excurved below costa, incurved in cell, then obliquely curved; orbicular with very slight whitish annulus and its centre faintly defined by brown above; a large U-shaped silvery-white stigma filled in with grey below the cell; reniform with slight silvery-white annulus defined at sides by black-brown and its centre defined by black-brown, constricted at middle; postmedial line double, dark brown filled in with whitish, bent outwards below costa and incurved below discal fold; the terminal area tinged with brown except towards tornus; a slight minutely waved brown subterminal line defined on outer side by grey and slightly excurved below veins 7 and 6; a terminal series of slight dark lunules defined on inner side by whitish. Hind wing yellow, the basal and inner areas irrorated with brown, the terminal area dark brown; cilia white with a brown line through them; the underside yellow, the costal area irrorated with red-brown, the terminal area suffused with red-brown, a slight discoidal lunule.

Hab. Canada, Br. Columbia, Brobokton Creek (*Mrs. Nicholl*), 7 ♂, 1 ♀ type; U.S.A., Washington Forest Reserve, Early Winter Creek (*Mrs. Nicholl*), 1 ♂. *Exp.* 34–40 millim.

8232. Syngrapha diasema. (Plate CCXXXVI. fig. 6.)

Plusia diasema, Boisd. Ind. Meth. p. 93 (1829); Herr.-Schäff. Eur. Schmett., Noct. f. 597; Smith, Cat. Noct. N. Am. p. 256; Staud. Cat. Lep. pal. p. 239.

Plusia borea, Auriv. Bihang K. Svensk. Vet.-Akad. Handl. xv. 4. i. p. 17, pl. i. f. 8 (1890).

Head and thorax grey mixed with dark red-brown; tarsi dark brown ringed with white; abdomen grey suffused with brown, the

crests black-brown tipped with grey. Fore wing blue-grey striated with black-brown, the medial area below the cell deep rufous except towards inner margin; subbasal line black-brown defined on outer side by whitish, sinuous, from costa to vein 1; antemedial line black-brown defined on inner side by whitish, excurved below costa, incurved in cell, then obliquely curved and slightly incurved at vein 1; orbicular with slight whitish annulus and its centre defined by red-brown, oblique elliptical; an oblique silvery-white U-shaped stigma below the cell, filled in with grey and its inner arm running inwards almost to the antemedial line; reniform with slight whitish annulus defined on inner side by black-brown and its centre defined by brown, somewhat constricted at middle where there is a black-brown spot beyond it; postmedial line double, brown filled in with whitish, bent outwards below costa and incurved below discal fold, some white points beyond it on costa; the terminal area slightly tinged with red-brown; a faint waved grey subterminal line; a series of minute whitish lunules just before termen. Hind wing yellow, the basal and inner areas suffused with red-brown, the terminal area deep cupreous red-brown; cilia white with a brown line near base; the underside yellow irrorated with red-brown, the terminal area suffused with red-brown, a brown discoidal lunule.

Ab. 1. *borea*. Smaller; fore wing with white point beyond the stigma; hind wing yellower.

Ab. 2. Fore wing with the stigma Y-shaped with a narrow tail.

Hab. Greenland; Labrador; Canada, Hudson's Bay, Albany R., St. Martin's Falls (*Barnston*), 1 ♂, 1 ♀; Scandinavia, Mountains, Lapland, Leech Coll., Kusamo, Zeller Coll.; Finland; E. Turkestan, Thian Shán Mts.; E. Siberia, Dahuria, Amurland. *Exp.* 38–42 millim.

Larva. Kirby, Butt. & Moths Eur. p. 272; Hffm. Raup. p. 135.

Green with fine whitish longitudinal lines. Food-plant, *Betula*.

8233. **Syngrapha sacceni.** (Plate CCXXXVI. fig. 7.)

Plusia sackenii, Grote, Can. Ent. ix. p. 136 (1872); Ottolengui, J. N.Y. Ent. Soc. x. pl. viii. f. 17; Smith, Cat. Noct. N. Am. p. 257.

♀. Head and thorax dark red-brown mixed with grey; tegulæ with black band before the tips which are white; patagia white at tips; tarsi ringed with white; abdomen grey-brown, the crests black towards the tips which are white. Fore wing purplish grey suffused with red-brown and slightly irrorated with black; the medial area below the cell deep chocolate-brown; subbasal line slight, black, angled outwards below costa and ending at vein 1; antemedial line black defined on inner side by silvery-white, angled outwards below costa, incurved in cell, then oblique and sinuous; orbicular absent; an oblique silvery-white U-shaped stigma filled in with grey below the cell, its inner arm extending along median nervure almost to the antemedial line, a short streak beyond its lower extremity; reniform with slight silvery annulus defined by

black-brown and with its centre defined by black-brown, oblique bar-shaped; postmedial line silvery-white faintly defined on each side by red-brown on costal half and prominently by black-brown on inner half, bent outwards below costa, then minutely waved to vein 5, then incurved, and excurved below submedian fold, some rufous before it on inner half and some yellow beyond it at tornus; subterminal line indistinct, brownish, angled outwards below veins 7, 6, 4, 3, then slightly waved; the veins of terminal area with slight dark streaks; a fine blackish terminal line with series of white striæ before it; cilia dark chocolate-brown, chequered brown and white at tips. Hind wing yellow; the base and inner margin suffused with red-brown; a slight brown discoidal lunule; the terminal area dark brown, narrowing to tornus; cilia chequered white and brown. Underside orange-yellow, the costal and terminal areas suffused with red-brown; dark discoidal striæ.

Hab. U.S.A., Colorado (*Snow*, *Bruce*), 2 ♀, Idaho Springs (*Osten-Sacken*), 1 ♀ type. *Exp.* 36–40 millim.

8234. **Syngrapha snovi.** (Plate CCXXXVI. fig. 8.)

Plusia snowii, H. Edw. Papilio, iv. p. 44 (1884); Ottolengui, J. N.Y. Ent. Soc. x. p. 75, pl. viii. f. 16; Smith, Cat. Noct. N. Am. p. 257.

Head and thorax purple-grey mixed with black-brown; tegulæ with two black lines towards tips; patagia with two oblique black bars; the dorsal crest with some red-brown; pectus and legs red-brown and grey, the tarsi dark brown ringed with white; abdomen grey-brown, the crests black at tips. Fore wing purple-grey slightly tinged in parts with red-brown and striated with blackish, the medial area below the cell deep chocolate-brown; subbasal line slight, blackish defined on outer side by whitish, sinuous, from costa to vein 1; antemedial line black defined on inner side by silvery-white, angled outwards below costa, incurved in cell, then oblique and sinuous; orbicular with slight grey annulus and its centre defined by black-brown, small, round, a silvery-white **U**-shaped stigma below the cell, filled in with grey and its arms defined by red-brown, its inner arm extending along median nervure almost to the antemedial line, a short streak beyond its lower extremity; reniform with slight silvery-white annulus defined by black-brown and its centre defined by black-brown, oblique bar-shaped; postmedial line double, pale brown filled in in parts with whitish, bent outwards below costa, then minutely waved to vein 6, then incurved and excurved below submedian fold, some rufous before it on inner half and some yellow beyond it at tornus; subterminal line indistinct, grey slightly defined on inner side by brown, minutely waved, angled outwards below veins 7, 6, 4, 3; a series of slight whitish striæ before termen; cilia chequered whitish and brown at tips. Hind wing yellow; the base and inner margin suffused with brown; a slight discoidal lunule; the terminal area dark brown narrowing to tornus; cilia chequered dark brown and white. Underside

of fore wing red-brown with some yellow on disk; hind wing yellow, the costal and terminal areas suffused with red-brown, a small black discoidal lunule.

Ab. 1. Fore wing without the streak beyond the lower extremity of stigma.

Hab. CANADA, Alberta, Calgary (*Wolley-Dod*), 1 ♀, Br. Columbia, Athabasca (*Mrs. Nicoll*), 1 ♂; U.S.A., Colorado, South Park, New Mexico. *Exp.* 32–38 millim.

8235. **Syngrapha falcifera.** (Plate CCXXXVI. fig. 9.)

Plusia falcifera, Kirby, Faun. Bor.-Am. iv. p. 308 (1837); Ottolengui, J. N.Y. Ent. Soc. x. pl. ix. f. 2.
Plusia simplex, Guen. Noct. ii. p. 346 (1852); Smith, Cat. Noct. N. Am. p. 256.
Plusia falcigera, Smith, Cat. Noct. N. Am. p. 254 (1893).

Head and thorax pale grey mixed with red-brown; tegulæ whitish at tips; a slight curved whitish line across patagia and mesothorax; abdomen pale grey tinged with brown, the crests dark brown at tips. Fore wing pale grey tinged and irrorated with brown, the medial area below the cell suffused with chocolate-brown; subbasal line represented by a curved whitish striga from costa; antemedial line indistinct and whitish to median nervure, then silvery-white, angled outwards below costa, incurved in cell, then oblique; traces of a very narrow oblique orbicular with whitish outline; a rather small oblique silvery **Y**-shaped stigma below the cell, its tail dilated at extremity; reniform faintly defined by brown, very narrow; postmedial line indistinct, double, red-brown filled in with grey and with silver towards inner margin, bent outwards below costa, then minutely waved, oblique to vein 2, then erect; subterminal line red-brown, excurved below vein 7, slightly angled inwards at vein 4 and outwards below veins 4 and 3, crossed by an oblique cupreous brown shade from apex to vein 4; the terminal area whitish grey. Hind wing yellowish white, the basal area with some red-brown suffusion; an oblique diffused red-brown postmedial line, the terminal area red-brown; cilia white with a red-brown line near base; the underside white, the costal and terminal areas irrorated with brown, a discoidal striga and diffused oblique postmedial line.

Ab. 1. *simplex.* Fore wing much more suffused with red-brown, the medial area below the cell deep chocolate-brown with some fiery red before the postmedial line.

Hab. CANADA, Anticosti I., 1 ♀, Hudson's Bay, Albany R., St. Martin's Falls (*Barnston*), 2 ♂, 1 ♀, Ontario, Orillia (*Bush*), 1 ♀, Alberta, Calgary (*Wolley-Dod*), 2 ♂, Br. Columbia, Coldstream Ranch (*Miss Ricardo*), 1 ♀, Nepigon (*Fletcher*), 1 ♂; U.S.A., East of Rocky Mts., 3 ♂, New York, Trenton Falls (*Doubleday*), 1 ♂ type *simplex*, Illinois, 1 ♀, Texas, Dallas (*Boll*), 6 ♂,

Colorado, Durango (*Oslar*), 4 ♂, New Mexico, *Exp.* 34–44 millim.

Larva. (*precationis.*) Coquillett, Can. Ent. xiii. p. 21, & xiv. p. 60.

Deep green; two dorsal, a subdorsal, and a stigmatal white line, the last most distinct; warts green usually tipped with black, each with a short black hair; head pale green; two anterior pairs of prolegs absent. Food-plants, Grasses. 4–6.

*8236. Syngrapha simplicissima.

Autographa simplicima, Ottolengui, J. N.Y. Ent. Soc. x. p. 74, pl. vi. f. 6 (1902); Dyar, Cat. Lep. N. Am. p. 202.

♀. Head, thorax, and abdomen brown. Fore wing dull brown, the medial area below the cell darker brown; antemedial line silvery white, obsolete to median nervure, then oblique; orbicular almost obsolete, defined by grey, oblique elliptical; the stigma below the cell silvery, Y-shaped, very small, the tail very short and ending in a point; reniform defined by grey, its outer edge indented at middle; postmedial line indistinct, greyish, bent outwards below costa, then slightly waved, oblique to submedian fold, then erect; subterminal line indistinct, arising from apex, oblique and slightly sinuous. Hind wing brown with a paler medial band.

Hab. U.S.A., Washington. *Exp.* 30 millim. This species is unknown to me.

*8237. Syngrapha speciosa.

Autographa speciosa, Ottolengui, J. N.Y. Ent. Soc. x. p. 73, pl. vi. f. 9 (1902); Dyar, Cat. Lep. N. Am. p. 202.

♂. Head, thorax, and abdomen chocolate-brown mixed with grey. Fore wing chocolate-brown mixed with grey, the medial area below the cell and the area before the subterminal line darker; subbasal line blackish defined on outer side by white, sinuous, from costa to vein 1; antemedial line blackish defined on each side by white, slightly excurved below costa then almost straight; orbicular brown on a diffused whitish patch, rather U-shaped; the stigma below the cell silvery-white, Y-shaped, its tail lobed at extremity; reniform with slight pale outline, narrow, some yellowish above it on costa; postmedial line blackish defined on each side by white, slightly bent outwards below costa, then oblique and slightly sinuous; a whitish band beyond it from costa to vein 3; subterminal line blackish, angled outwards below veins 7, 6, 4, 3 and excurved below submedian fold. Hind wing pale yellow tinged with brown, the terminal area suffused with brown narrowing to tornus; cilia white; the underside pale yellowish, the costal and terminal areas irrorated with brown, a dark discoidal spot.

Hab. Canada, Vancouver, Corfield (*Livingstone*). *Exp.* 34 millim. This species is unknown to me.

8238. **Syngrapha epigæa.** (Plate CCXXXVI. fig. 10.)

Plusia epigæa, Grote, Proc. Ac. Nat. Sci. Phil. 1874, p. 208; Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 16; Smith, Cat. Noct. N. Am. p. 255.

Head and thorax grey mixed with dark brown; a blackish line between antennæ; tegulæ with two black lines and white tips; patagia with two oblique black bars; the dorsal crest rufous in front and with white tips; pectus grey tinged with rufous; tarsi dark brown ringed with white; abdomen grey suffused with rufous, the crests black-brown tipped with white. Fore wing grey tinged in parts with red-brown and irrorated with black, the medial area with a patch of deep red-brown suffusion below the cell; subbasal line double, black-brown, excurved below costa, then oblique and ending at subcostal nervure; antemedial line double, black-brown, excurved below costa, bent inwards in cell, then oblique and sinuous; orbicular with brownish centre and diffused whitish annulus, oblique and irregularly elliptical; a fine oblique silvery-white Y-shaped stigma below the cell, its arms filled in with grey, its tail dilated into a small spot; reniform with whitish annulus defined at side by black-brown, oblique bar-shaped; postmedial line double, reddish brown fillled in with whitish, bent outwards below costa, then minutely waved, incurved below vein 4, some white points beyond it on costa; subterminal line brown, waved, angled outwards below veins 7, 4, 3; a fine waved brown terminal line and whitish line at base of cilia. Hind wing cupreous red-brown with a pale postmedial shade and the terminal area darker; cilia white with a maculate brown line near base; the underside whitish suffused and irrorated with red-brown especially on terminal area, a slight discoidal lunule and sinuous postmedial line.

Ab. 1. Fore wing with the tail of the stigma almost obsolete.

Hab. U.S.A., Massachusetts, New York, 1 ♂, 1 ♀ type, Washington, 1 ♀, Colorado. *Exp.* 44 millim.

8239. **Syngrapha selecta.** (Plate CCXXXVI. fig. 11.)

Plusia selecta, Wlk. xii. 912 (1857); Ottolengui, J. N.Y. Ent. Soc. x. pl. ix. f. 7; Smith, Cat. Noct. N. Am. p. 255.
Plusia viridisigma, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 73 (1874).
Plusia viridisignata, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 315 (1874).

Head and thorax grey-white mixed with dark brown; a brown line between antennæ; tegulæ with three brown lines defined by white; patagia with two oblique lines and a short bar between them; dorsal crest tipped with white; tarsi dark brown ringed with white; abdomen grey suffused with brown, the crests black-brown tipped with white. Fore wing purplish silvery-grey thickly irrorated with dark brown; subbasal line double, slightly excurved below costa, then oblique and ending at vein 1; antemedial line double, dark brown, angled outwards below costa, strongly bent inwards in cell, then oblique and waved; orbicular with whitish

annulus and its centre defined by dark brown, inverted cone-shaped; a greenish silvery V-shaped stigma below the cell, its outer edge giving off a lobe from middle; reniform with whitish annulus defined by black-brown and its centre defined by black-brown, oblique bar-shaped; a rather diffused sinuous dark brown medial line, oblique to below lower angle of cell, then inwardly oblique; postmedial line double, dark brown, filled in with whitish towards inner margin, slightly bent outwards below costa, then minutely dentate, obliquely curved to vein 2, then erect, some white points beyond it on costa; subterminal line dark brown slightly defined on outer side by white, obliquely curved from below costa to vein 5, excurved below veins 4 and 3 and below submedian fold; a crenulate dark brown line before termen and a waved dark brown terminal line; cilia chequered dark brown and grey. Hind wing ochreous suffused with red-brown, a paler medial shade, the terminal area darker; cilia chequered whitish and dark brown; the underside ochreous tinged with reddish brown especially on terminal area, an indistinct discoidal spot and oblique postmedial line.

Ab. 1. *viridisigma*. Fore wing with the lobe on outer edge of the stigma rounded, the subterminal line angled outwards at vein 7 and bent inwards at discal fold.

Hab. CANADA, Hudson's Bay, Albany R., St. Martin's Falls (*Barnston*), 1 ♀ type, Quebec, 1 ♀ type *viridisigma*, Br. Columbia, Sicamous Junct. (*Miss Ricardo*), 1 ♂, Vancouver I., 1 ♀; U.S.A., New York, Buffalo, 1 ♂, Adirondack Mts., Colorado, Denver. *Exp.* 44–48 millim.

*8240. Syngrapha celsa.

Plusia celsa, H. Edw. Papilio, i. p. 101 (1881); Ottolengui, J. N.Y. Ent. Soc. x. p, 72, pl. viii. f. 4; Smith, Cat. Noct. N. Am. p. 255.

Head and thorax grey mixed with brown; abdomen grey suffused with brown. Fore wing grey thickly irrorated with dark brown, the medial area below the cell suffused with chocolate-brown; subbasal line double, brown, sinuous, from costa to submedian fold; antemedial line double, blackish filled in with white, angled outwards below costa, incurved in cell, then oblique and sinuous; orbicular defined by blackish and grey at sides, rather V-shaped; the stigma below the cell greenish silvery, erect V-shaped with a spot beyond its lower extremity or conjoined to it; reniform with grey annulus defined at sides by blackish and with its centre defined by blackish, narrow, its outer edge indented at middle; postmedial line double, blackish filled in with white, excurved below costa, at middle, and below submedian fold, some white points beyond it on costa; subterminal line brown defined on outer side by whitish, angled outwards below veins 7, 6, 4, 3 and excurved below submedian fold; a terminal series of whitish lunules defined

by brown. Hind wing ochreous yellow, the basal area tinged with brown, the terminal area suffused with brown; cilia brownish white; the underside with the discoidal spot distinct.

Hab. U.S.A., Oregon, Mt. Hood, Dalles. *Exp.* 42 millim. This species is unknown to me.

8241. **Syngrapha rectangula.** (Plate CCXXXVI. fig. 14.)

Plusia rectangula, Kirby, Faun. Bor.-Am. iv. p. 306 (1837); Ottolengui, J. N.Y. Ent. Soc. x. p. 68, pl. viii. f. 12; Smith, Cat. Noct. N. Am. p. 254.
Plusia mortuorum, Guen. Noct. ii. p. 353 (1852); Smith, Cat. Noct. N. Am. p. 254.

Head and thorax black-brown mixed with white, the tegulæ with slight white line at middle and white tips, the patagia with white bars at middle and tips, the dorsal crest ochreous grey tipped with black and white; pectus and legs brownish grey, the tibiæ and tarsi black-brown ringed with white; abdomen grey suffused with brown, the crests black-brown tipped with white. Fore wing grey suffused with brown and irrorated with black, the basal area, the inner half of antemedial area, basal half of postmedial area and terminal area except at apex silvery-white; subbasal line black defined on each side by silvery-white, from costa to submedian fold; antemedial line black, defined on inner side by silvery-white, angled outwards below costa and inwards in cell, bent inwards at vein 1; orbicular silvery-white defined at sides by black, oblique bar-shaped; a silvery-white stigma below the cell giving off two claws below; reniform defined by white except below, with black marks in its extremities and strongly constricted at middle where there is a black spot beyond it; postmedial line black defined on outer side by silvery-white, bent outwards below costa, oblique and slightly waved below vein 6, excurved at middle, some white points beyond it on costa; subterminal line black, defined on inner side by brownish suffusion and on outer side by silvery-white, excurved below vein 7, angled outwards below veins 4 and 3 and below submedian fold; a waved black terminal line; cilia chequered black-brown and white. Hind wing whitish, the basal area suffused with reddish brown, the terminal area with dark brown leaving a whitish postmedial shade; cilia white chequered with dark brown at base; the underside with slight blackish discoidal lunule and diffused postmedial line before the whitish shade.

Ab. 1. *mortuorum*. Fore wing with only one claw on lower edge of stigma, the outer claw reduced to a small detached round spot.

Ab. 2. Fore wing without spot beyond the stigma.

Hab. Canada, Orillia (*Bush*), 3 ♀, Br. Columbia, Fraser R. (*St. John*), 1 ♀, Sicamous Junct. (*Miss Ricardo*), 1 ♀; U.S.A., Northern and Eastern States, New York (*Doubleday*), 3 ♂ type *mortuorum*, New Jersey, Valley (*Grote*), 2 ♂. *Exp.* 38–40 millim.

8242. Syngrapha alias. (Plate CCXXXVI. fig. 15.)

Autographa alias, Ottolengui, J.N.Y. Ent. Soc. x. p. 69, pl. viii. ff. 7, 13 (1902); Dyar, Cat. Lep. N. Am. p. 201.
Plusia u-aureum, Smith, Cat. Noct. N. Am. p. 254 (part.).

Head and thorax dark brown mixed with white; tegulæ with slight white medial line and white tips, the patagia with white bar at middle and white tips, the metathoracic crest tipped with white; tibiæ at extremities and tarsi ringed with white; abdomen grey suffused with reddish brown, the crests dark brown tipped with white. Fore wing purplish grey suffused in parts with brown and irrorated with black, the basal area, inner antemedial area, and terminal area more silvery-white, the medial area below the cell browner; subbasal line black defined on outer side by silvery-white, waved, from costa to vein 1; antemedial line black defined on inner side by silvery-white, angled outwards below costa, incurved in cell, then oblique and waved; orbicular defined by silvery-white except above and rather U-shaped; a silvery-white stigma below the cell, forked above and with two rather claw-like projections below; reniform with incomplete white annulus and its centre defined by black, constricted at middle where there is a black spot on its outer side; postmedial line double, blackish filled it with silvery-white, bent outwards below costa, then oblique, waved, excurved at middle, a slight golden cupreous mark before it at submedian fold, some white beyond it on costal half and some white points on costa; subterminal line silvery-white defined on inner side by black with brown suffusion before it, excurved below vein 7, angled outwards below veins 4 and 3, then slightly waved; a terminal series of brown lunules defined on inner side by silvery lunules with rather dentate brown marks before them; cilia chequered white and brown. Hind wing with the basal area red-brown followed by a whitish postmedial shade; the terminal area dark brown; cilia chequered brown and white; the underside whitish suffused with pale red-brown, the terminal area dark brown, a blackish discoidal lunule and curved postmedial line.

Hab. Canada, New Brunswick, St. John (*Melitosh*), 1 ♂; U.S.A., Northern States, New Hampshire, 1 ♀, New York, Trenton Falls (*Doubleday*), 1 ♂, Valley (*Grote*), 1 ♀. *Exp.* 40 millim.

8243. Syngrapha u-aureum. (Plate CCXXXVI. fig. 16.)

Plusia u-aureum, Guen. Noct. ii. p. 354 (1852); Smith, Cat. Noct. N. Am. p. 254.
Plusia vaccinii, H. Edw. Ent. Am. ii. p. 170 (1886); Ottolengui, J.N.Y. Ent. Soc. x. p. 71, pl. viii. f. 3; Smith, Cat. Noct. N. Am. p. 254.

Head and thorax dark brown mixed with purplish grey; tegulæ with slight white line at middle and white tips; patagia with white bars near base and at middle, and white tips; tibiæ at extremities, the spurs and tarsi ringed with white; abdomen reddish brown, the crests dark brown tipped with white. Fore wing purple-grey

suffused in parts with brown and irrorated with black, the terminal area with some silvery-white; subbasal line black defined at sides by white, waved, from costa to vein 1; antemedial line double, blackish filled in with with silvery-white, angled outwards below costa, incurved in cell, then oblique and waved; orbicular with slight white annulus and its centre defined by black, oblique, elliptical; a silvery-white irregular U-shaped stigma below the cell with a small round white spot beyond its lower extremity, some black-brown suffusion round it; reniform with incomplete white annulus, its centre defined by black, constricted at middle where there is a black spot beyond it; postmedial line blackish defined on outer side by white and on inner side also on costal half, bent outwards below costa, then oblique and waved, some white points beyond it on costa; subterminal line black defined on inner side by brown suffusion and on outer by white suffusion, excurved below vein 7, angled outwards below veins 4 and 3, then waved; a terminal series of black lunules defined on inner side by white lunules with rather dentate brown marks before them; cilia chequed brown and white. Hind wing with the basal area reddish brown followed by a narrow diffused whitish band, the terminal area dark brown; cilia chequered brown and white; the underside white tinged and irrorated with brown, a dark discoidal lunule and oblique postmedial line, the terminal area suffused with brown.

Hab. CANADA, Nova Scotia; U.S.A., New Hampshire, Mt. Washington, 1 ♀, New York, Adirondack Mts., Alpine (*Grote*), 1 ♂, 2 ♀. *Exp.* 38 millim.

8244. **Syngrapha octoscripta.** (Plate CCXXXVI. fig. 17.)

Plusia octoscripta, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 72 (1874); Ottolengui, J. N.Y. Ent. Soc. x. pl. viii. f. 14; Smith, Cat. Noct. N. Am. p. 254.

Plusia 8-signata, Grote, Can. Ent. vi. p. 72 (1874).

Plusia epsilon, Ottolengui, Proc. Wash. Acad. Sci. ii. p. 494 (1900); id. J. N.Y. Ent. Soc. x. pl. vi. f. 8; Dyar, Cat. Lep. N. Am. p. 201.

Autographa zeta, Ottolengui, J. N.Y. Ent. Soc. x. p. 70, pl. vi. f. 1 (1902); Dyar, Cat. Lep. N. Am. p. 202.

Autographa variana, Ottolengui, J. N.Y. Ent. Soc. x. p. 70, pl. vi. f. 10 (1902); Dyar, Cat. Lep. N. Am. p. 201.

Autographa pallida, Ottolengui, J. N.Y. Ent. Soc. x. p. 71, pl. vi. f. 7 (1902); Dyar, Cat. Lep. N. Am. p. 202.

Head and thorax dark brown mixed with white; tegulæ with black line at middle defined behind by white and white tips, the patagia with black bar near tips which are white; tibiæ at extremities and tarsi ringed with white; abdomen whitish tinged with red-brown, the crests black-brown tipped with white. Fore wing grey-white suffused in parts with brown and irrorated with black; subbasal line blackish defined at sides by silvery-white, oblique, waved, from costa to vein 1; antemedial line blackish defined on inner side by silvery-white, angled outwards below costa, incurved in cell, then oblique, waved; an irregular silvery-white U-shaped stigma defined

by black below the cell, its outer edge connected at middle with a small annulus; reniform with incomplete silvery-white annulus and its centre defined by black, angled outwards at upper extremity and inwards on median nervure; postmedial line double, dark brown filled in with white, bent outwards below costa, then oblique, waved, some white suffusion beyond it on costal half and some white points on costa; subterminal line black with brown suffusion before it and slight whitish suffusion beyond it, excurved below vein 7 and angled outwards below veins 4 and 3, then waved; a series of white lunules just before termen defined on each side by brown; cilia chequered brown and white. Hind wing whitish tinged with pale red-brown especially on basal area, the terminal area dark reddish brown; an indistinct brown postmedial line; cilia chequered dark brown and white; the underside yellowish white irrorated with red-brown, the terminal area suffused with red-brown, a dark discoidal striga and rather diffused curved postmedial line.

Ab. 1. *epsilon*. Fore wing with the stigma confluent with the small annulus and forming the letter ω.

Ab. 2. *zeta*. Fore wing with the stigma confluent with the annulus which is filled in with white.

Ab. 3. Fore wing with the small round spot beyond the stigma with which it is disconnected above and connected below.

Ab. 4. *pallida*. Similar to ab. 3, but fore wing pale brown with paler shading.—Newfoundland.

Ab. 5. *variana*. Fore wing much more variegated pale pearl-grey and dark brown, the stigma as in the typical form but the annulus filled in with white.

Hab. Alaska; Newfoundland; Canada, Hudson's Bay, Albany R., St. Martin's Falls (*Barnston*), 1 ♂, 1 ♀, Anticosti I., Nova Scotia (*Redman*), 3 ♂, New Brunswick, St. John, 1 ♀, Br. Columbia, Pass D. Hope (*Mrs. Nicholl*), 1 ♀, Duncans (*Hanham*), 1 ♀, Laggan (*Fletcher*), 1 ♀, Metlakatla (*Keen*), 2 ♀; U.S.A., 1 ♂, Maine, Vermont, Massachusetts, New York, Wisconsin, Washington Forest Reserve, Early Winter Creek (*Mrs. Nicholl*), 2 ♀. *Exp.* 38–40 millim.

*8245. **Syngrapha arctica.** (Plate CCXXXVI. fig. 18.)

Autographa arctica, Ottolengui, J. N.Y. Ent. Soc. x. p. 66, pl. vi. f. 11 (1902).
Autographa ottolengui, Dyar, Cat. Lep. N. Am. p. 201 (1902).

Head and thorax dark brown mixed with grey; abdomen grey suffused with brown. Fore wing dull brown mixed with grey, a whitish postmedial shade from costa to vein 4 and a whitish patch at tornus; subbasal line double, blackish, sinuous, from costa to submedian fold; antemedial line double, blackish, angled outwards below costa, incurved in cell, then waved; orbicular with blackish outline defined by whitish, oblique elliptical; the stigma below the cell golden, erect irregular V-shaped with a spot conjoined to its lower extremity; reniform defined by black, narrow; postmedial

line double, blackish, bent outwards below costa, then oblique and sinuous; subterminal line black, excurved below vein 7, at middle and below submedian fold; a whitish terminal line. Hind wing ochreous, the basal area tinged with brown, the terminal area suffused with brown; cilia white with brown spots at the veins.

Hab. Alaska, Alter I. (*Turner*). *Exp.* 34 millim. This species is unknown to me, figured from a drawing from type in U.S. Nat. Mus.

8246. **Syngrapha excelsa.** (Plate CCXXXVI. fig. 19.)

Autographa excelsa, Ottolengui, J. N.Y. Ent. Soc. x. p. 71, pl. vi. f. 3 (1902); Dyar, Cat. Lep. N. Am. p. 202.

♀. Head, thorax, and abdomen grey mixed with brown. Fore wing grey-white, thickly irrorated with brown; subbasal line double, blackish filled in with white, from costa to vein 1; antemedial line double, blackish filled in with white, excurved below costa, angled inwards in cell, then oblique and sinuous; orbicular with slight whitish annulus, oblique; a **V**-shaped white striga below the cell, its lower extremity bent slightly outwards and with a round spot beyond it; reniform with slight pale annulus, narrow; postmedial line double, blackish filled in with whitish, bent outwards below costa, then oblique to submedian fold where it is slightly angled inwards, then excurved, some white points beyond it on costa; subterminal line blackish defined on inner side by a brown shade and on outer slightly by white, excurved below vein 7 and angled outwards below veins 4 and 3; cilia chequered white and brown. Hind wing yellowish suffused with red-brown, the terminal area brown; cilia chequered white and brown; the underside yellowish thickly irrorated with brown, the terminal area suffused with brown.

Ab. 1. Fore wing with the spot beyond the stigma absent.

Hab. Canada, Alberta, Laggan, Banff (*Sanson*), 1 ♀; U.S.A., New Hampshire, Washington Forest Reserve, State Creek (*Mrs. Nicholl*), 1 ♀. *Exp.* 34 millim.

8247. **Syngrapha angulidens.** (Plate CCXXXVI. fig. 20.)

Plusia angulidens, Smith, Trans, Am. Ent. Soc. xviii. p. 111 (1891); Ottolengui, J. N.Y. Ent. Soc. x. p. 71, pl. viii. f. 5; Smith, Cat. Noct. N. Am. p. 255.

Head and thorax purplish grey mixed with black-brown; pectus brownish white; legs whitish mixed with black-brown, the tarsi black-brown ringed with white; abdomen grey mixed with brown, the crests blackish. Fore wing purple-grey irrorated with black-brown, the medial area with some black-brown below the cell; subbasal line black defined on outer side by white, sinuous, from costa to vein 1; antemedial line double, black filled in with whitish, angled inwards in cell, then oblique, waved; orbicular defined by black-brown, small,

oblique elliptical; a V-shaped silvery-white stigma below the cell with its apex slightly bent inwards and a small spot beyond its lower extremity; reniform with slight white annulus and its centre defined by black, narrow, oblique; an oblique sinuous dark medial shade; postmedial line double, black filled in with white, bent outwards below costa, then oblique, excurved at middle and below submedian fold, some white points beyond it on costa; subterminal line black defined on inner side by brown suffusion, excurved below vein 7, angled outwards below veins 4 and 3, then slightly waved; a series of slight white lunules just before termen defined on each side by dark brown; cilia chequered dark brown and white. Hind wing fulvous yellow irrorated with brown, the cell and veins suffused with brown, the terminal area dark brown; cilia white chequered with brown; the underside ochreous white irrorated with brown especially on costal and terminal areas, a small black discoidal spot.

Ab. 1. Fore wing without white spot beyond the stigma.

Hab. U.S.A., Colorado (*Bruce, Cockerell*), 3 ♀, South Park (*Oslar*), 3 ♂, 1 ♀, Gore's Range (*Comstock*), 1 ♂, New Mexico, Pecos (*Cockerell*), 1 ♀. *Exp.* 34–40 millim.

8248. **Syngrapha pyrenaica**, n. sp. (Plate CCXXXVI. fig. 21.)

Head and thorax purplish grey mixed with dark brown and white; tegulæ with two dark brown lines defined behind by white; patagia with oblique dark bars at middle and near tips defined behind by white; the dorsal crest tipped with white; tarsi ringed with white; abdomen grey suffused with reddish brown, the crests black-brown towards tips. Fore wing pale purplish grey tinged in parts with brown and irrorated with black; subbasal line double, dark brown filled in with whitish, slightly excurved below costa, then oblique and ending at vein 1; antemedial line double, dark brown filled in with whitish, angled outwards below costa, bent inwards in cell, then oblique and waved; orbicular with whitish annulus and its centre defined by dark brown, oblique, ovoid; a rather irregular silvery-white V-shaped stigma below the cell defined by dark brown; reniform with slight silvery annulus defined by black-brown and its centre defined by black-brown, oblique bar-shaped; a sinuous dark brown medial line, oblique to lower angle of cell, then inwardly oblique; postmedial line double, dark brown filled in by whitish, slightly bent outwards below costa, then oblique and minutely waved, some white points beyond it on costa; subterminal line black-brown with a brown shade before it, excurved at vein 7, angled outwards below veins 4 and 3, then waved; a waved whitish line just before termen defined on each side by brown; cilia chequered grey and brown. Hind wing ochreous suffused with red-brown, the terminal area darker; a slight brown postmedial line with paler shade beyond it; cilia white with a series of brown spots at base; the underside whitish

tinged with red-brown and irrorated with dark brown, the terminal area suffused with brown, a rather diffused curved brown postmedial line.

Hab. France, Pyrenees, Gavarnie (*Mrs. Nicholl*), 1 ♂, 1 ♀ type. *Exp.* 40 millim.

8249. **Syngrapha altera.** (Plate CCXXXVI. fig. 22.)

Autographa altera, Ottolengui, J. N.Y. Ent. Soc. x. p. 69, pl. viii. f. 9 (1902); Dyar, Cat. Lep. N. Am. p. 201.

Head and thorax grey-white mixed with black-brown; pectus whitish; legs whitish tinged with ochreous and irrorated with black-brown; abdomen whitish tinged with ochreous and irrorated with black-brown, the crests black tipped with white. Fore wing grey-white suffused with brown and irrorated with black, the medial area below the cell and postmedial area dark brown; subbasal line black defined on outer side by white, from costa to vein 1; antemedial line double, black filled in with white, angled outwards below costa, strongly incurved in cell, then oblique, waved; orbicular with whitish annulus and its centre defined by blackish, irregularly rounded; a rather irregular V-shaped white stigma below the cell with a small white spot beyond its lower extremity; reniform with slight white annulus and its centre defined by black, narrow and oblique, a whitish patch beyond it; postmedial line double, blackish filled in with whitish, bent outwards below costa, then oblique and excurved at middle, some white points beyond it on costa; subterminal line black, angled outwards below veins 7, 6, 4, and 3 and above vein 1; a fine dark terminal line; cilia chequered dark brown and white. Hind wing fulvous yellow irrorated with brown, the basal and inner areas suffused with brown, the terminal area dark brown; cilia chequered dark brown and white; the underside ochreous white irrorated with brown especially on costal and terminal areas, a black discoidal lunule.

Ab. 1. Fore wing with minute white annulus attached to the lower part of outer edge of the V-shaped stigma.

Hab. Canada, Ontario, Lake Nipigon, Br. Columbia, Pass D. Hope (*Mrs. Nicholl*), 2 ♂, Metlakatla (*Keen*), 1 ♀; U.S.A., Adirondack Mts. *Exp.* 38 millim.

*8250. **Syngrapha v-alba.**

Autographa v-alba, Ottolengui, J. N.Y. Ent. Soc. x. p. 73, pl. vi. f. 2 (1902); Dyar, Cat. Lep. N. Am. p. 201.

♀. Head, thorax, and abdomen dark brown mixed with grey. Fore wing irrorated with brown, the medial area below the cell suffused with dark brown; subbasal line brown defined on outer side by whitish, sinuous, from costa to vein 1, an oblique brown shade beyond it from costa; antemedial line brown defined on inner side by whitish, double at costa, excurved below costa,

incurved in cell, then obliquely excurved; orbicular small, dark, oblique; a small erect V-shaped white stigma below the cell; reniform with slight white annulus and its centre defined by black, narrow, oblique, an oblique dark bar above it from costa; postmedial line dark brown defined on outer side by white, indistinctly double on inner half, slightly bent outwards below costa, excurved to vein 4, then incurved; subterminal line whitish defined on inner side by dark brown suffusion, excurved below vein 7 and angled outwards below veins 4 and 3; cilia chequered white and brown. Hind wing ochreous tinged with brown, the terminal area suffused with brown; cilia chequered white and brown.

Hab. U.S.A., Wyoming, Yellowstone Pass (*Barnes*). *Exp.* 42 millim. This species is unknown to me.

*8251. Syngrapha surena.

Plusia surena, Grote, Bull. Geol. & Geog. Surv. Terr. vi. p. 585 (1882); Ottolengui, J. N.Y. Ent. Soc. x. pl. viii. f. 10; Smith, Cat. Noct. N. Am. p. 255.

Head and thorax whitish grey with some brown scales; tegulæ with black lines at middle and near tips; abdomen grey suffused with brown. Fore wing whitish grey irrorated with black, the medial area below the cell suffused with black-brown; subbasal line double, black filled in with white, excurved below costa and ending at submedian fold; antemedial line double, black filled in with white, excurved below costa, strongly incurved in cell, then oblique and sinuous; orbicular with whitish annulus and its centre defined by brown, oblique, irregular; the stigma below the cell silvery, erect V-shaped, filled in with grey, its outer arm rather irregular; reniform with whitish annulus defined at sides by black, narrow, oblique, its outer edge indented at middle; postmedial line double, black filled in with whitish, bent outwards below costa, then oblique and minutely waved, a whitish shade beyond it from costa to vein 4; subterminal line black with some dark suffusion before it, excurved below vein 7 and angled outwards below veins 4 and 3; a fine dark terminal line. Hind wing ochreous tinged with brown, the terminal area suffused with brown; cilia white with brown spots at the veins.

Hab. U.S.A., Maine, Orono. *Exp.* 38 millim. This species is unknown to me.

8252. Syngrapha interrogationis.

Noctua interrogationis, Linn. Syst. Nat. ed. x. p. 513 (1758); Clerck, Icones, pl. 6. f. 7; Esp. Schmett. iv. pl. 113. f. 1; Hübn. Eur. Schmett., Noct. ff. 281, 854; Dup. Lép. Fr. vii. 2. p. 47, pl. 136. f. 2; Steph. Ill. Brit. Ent., Haust. iii. p. 102; Frr. Beitr. pl. 130. f. 1; Staud. Cat. Lep. pal. p. 239.

Noctua æmula, Fabr. Mant. Ins. ii. p. 162 (1787).

Phalæna aurosignata, Donov. Brit. Ins. xiii. pl. 453. f. 1 (1808).
Plusia borealis, Reuter, Act. Fauna Flora Fenn. ix. p. 57 (1893).
Plusia transbaikalensis, Staud, Iris, v. p. 371 (1892).

Head and thorax dark red-brown mixed with grey-white; tegulæ with two dark lines defined behind by white; patagia with two dark bars defined by white; metathoracic crest tipped with white; tarsi ringed with white; abdomen grey suffused with red-brown, the crests dark brown tipped with white. Fore wing grey-white tinged in parts with red-brown and irrorated with black-brown, the medial area with a patch of black-brown suffusion below the cell; subbasal line double, dark brown filled in with silvery-white, waved, from costa to vein 1; antemedial line double, dark brown filled in with silvery-white, angled outwards below costa, bent inwards in cell, then waved; orbicular with silvery-white annulus and its centre defined by dark brown, oblique elliptical or irregularly rounded; a silvery-white rather irregular V-shaped stigma below the cell with a small spot or annulus beyond its lower extremity; reniform with silvery-white annulus defined at sides by dark brown and its centre defined by dark brown, constricted at middle; a rather diffused sinuous dark brown medial line, oblique to lower angle of cell, then inwardly oblique; postmedial line double, dark brown filled in by whitish, bent outwards below costa, then oblique and minutely waved, some white points beyond it on costa; subterminal line black-brown with some reddish brown suffusion before it except towards costa and a short dark streak at discal fold, excurved below vein 7, angled outwards below veins 4 and 3, then waved; a crenulate white line just before termen, defined on each side by dark brown; cilia chequered white and dark brown. Hind wing pale cupreous red-brown, the terminal area darker, an indistinct sinuous brown postmedial line; cilia white with a series of brown spots near base; the underside whitish tinged with red-brown and irrorated with dark brown, the terminal area suffused with dark brown, a slight brown discoidal lunule and oblique postmedial line.

Ab. 1. Fore wing with small annulus confluent with the outer edge of the stigma at middle.

Ab. 2. Fore wing with a small spot confluent with the stigma below.

Ab. 3. Fore wing without spot or annulus beyond the stigma.

Ab. 4. *transbaicalensis*. Fore wing much greyer; hind wing paler.—E. Siberia.

Hab. Britain, Leech Coll.; France; Germany, Zeller and Frey Colls.; Austria; Hungary; Switzerland; Zeller, Frey, and Leech Colls.; N. Italy; Scandinavia, Lapland, Leech Coll.; Russia, Livonia, Zeller Coll., St. Petersburg, Zeller Coll., Urals; E. Siberia, Amurland, 2 ♂, 1 ♀. *Exp.* 30–40 millim.

Larva. Meyr. Lep. Brit. p. 159; Barrett, Brit. Lep. vi. p. 133, pl. 243. f. 3; Hffm. Raup. p. 135.

Green; dorsal line darker with pale edges; subbasal line whitish green; lateral line whitish green with dark edges; spiracular line yellow. Food-plants: *Erica*, *Calluna*, *Urtica*, etc. 5–6.

8253. Syngrapha grœnlandica. (Plate CCXXXVI. fig. 23.)

Plusia grœnlandica, Staud. Stett. Ent. Zeit. 1857, p. 306.
Plusia artica, Möschl. Verh. zool.-bot. Ges. Wien, xxxiv. p. 296 (1884).
Plusia u-aureum, Auriv. Bihang K. Svensk. Vet.-Akad. Handl. xv. 4. 1. p. 16, pl. 1. f. 7 (1890); Staud. Cat. Lep. pal. p. 239 (nec Guen.).

Head and thorax dark brown mixed with grey-white, the tegulæ with blackish medial line defined behind by whitish and whitish tips, the patagia with oblique whitish line across them and whitish tips; tarsi with white mixed; pectus and abdomen reddish brown, the latter with the crests blackish and grey. Fore wing purplish grey irrorated with dark brown, the medial area with a patch of black-brown suffusion below the cell; subbasal line white defined on each side by dark brown, sinuous, from costa to vein 1; antemedial line indistinct towards costa, below the cell silvery-white defined on each side by brown, angled outwards below costa and inwards in cell, then oblique, waved; orbicular defined by brown, oblique elliptical; an oblique silvery V-shaped stigma below the cell, its lower extremity bent outwards; reniform with slight silvery outline, defined on inner side by black, its centre defined by black above and below, constricted at middle where there is a small black spot beyond it; postmedial line double, brown filled in with grey and with some silvery scales at inner margin, bent outwards below costa, then oblique and slightly waved, some whitish points beyond it on costa; subterminal line blackish with a brown shade on its inner side, excurved below vein 7, angled outwards below veins 4 and 3, then slightly waved to tornus; a terminal series of slight brown lunules defined on inner side by a waved whitish line. Hind wing ochreous suffused with red-brown leaving a faint pale postmedial band; cilia white, brownish at base and with brown marks from apex to vein 2; the underside ochreous tinged with red-brown, the costal and terminal areas irrorated with brown.

Hab. Iceland, 1 ♂, Frey Coll.; Greenland; Labrador. *Exp.* 38 millim.

8254. Syngrapha circumflexa.

Noctua circumflexa Linn. Syst. Nat. ed. xii. p. 844 (1767); Guen. Noct. ii. p. 352, pl. 11. f. 9; Hmpsn. Moths Ind. ii. p. 571; Staud. Cat. Lep. pal. p. 239.
Plusia graphica, Herr.-Schäff. Eur. Schmett. ii. p. 394, Noct. f. 548 (1845); Frr. Neue Beitr. pl. 576. f. 3.
Plusia daubii, Frr. Neue Beitr. p. 90, pl. 256. f. 2 (nec Boisd.).
Plusia patefacta, Wlk. xii. 924 (1857); Hmpsn. Ill. Het. B.M. viii. p. 16, pl. 149. f. 1.

Head and thorax red-brown slightly mixed with whitish, the patagia with slight oblique white line across them; tarsi brown ringed with white; abdomen grey suffused with red-brown. Fore

wing whitish suffused with red-brown with a golden gloss and striated with dark brown, the medial area with a deeper red-brown patch below the cell; subbasal line white defined on each side by dark brown, sinuous, from costa to submedian fold; antemedial line silvery-white defined on each side by deep red-brown, angled outwards below costa, strongly bent inwards in cell, then obliquely curved; orbicular with white annulus, oblique elliptical, narrowing below; an oblique silvery-white V-shaped stigma below the cell, its inner side angled inwards on median nervure, its arms filled in by whitish defined by red-brown; reniform with silvery-white outline and slight black marks in its four extremities, its inner edge oblique, its outer strongly indented at middle with a blackish mark beyond it; postmedial line double, red-brown filled in with whitish, bent outwards below costa, then oblique, slightly waved to discal fold and angled inwards at vein 2 and submedian fold, a whitish shade beyond it; subterminal line black-brown with short dark streaks before it from costa to below vein 3 and a longer streak at discal fold, angled inwards below costa, excurved at vein 7 and angled outwards below veins 4 and 3, a red-brown shade beyond it from costa to vein 2; a fine sinuous dark terminal line; cilia with a white line at base followed by a sinuous red-brown line. Hind wing white tinged with red-brown, the terminal area red-brown with a golden gloss; cilia white with a red-brown line near base; the underside white tinged and irrorated with red-brown, a slight brown discoidal striga, diffused postmedial line and subterminal shade.

Hab. Madeira (*Wollaston, Meek*), 1 ♂, 4 ♀; Canaries, Teneriffe (*Leech, Holt-White, Walsingham*), 4 ♂, 1 ♀; Dalmatia; Greece, Leech Coll.; S. Russia; Transvaal (*Ross*), 2 ♂, Pretoria (*Distant*), 1 ♀, Johannesburg (*Distant*), 1 ♂; Natal, Stanger (*Delvin*), 1 ♂, Estcourt (*Hutchinson*), 1 ♂, 1 ♀, Maritsberg (*Berensburg*), 1 ♀, Durban (*Leigh*), 1 ♂; Basutoland, Machacha (*Crawshay*), 1 ♂; Cape Colony (*Sir A. Smith, Drege*), 2 ♂, 4 ♀ type *patefacta*, Annshaw (*Miss F. Barrett*), 1 ♀, Grahamstown (*Mrs. Tuck*), 1 ♂, Capetown (*Trimen*), 1 ♀; Armenia; Asia Minor (*Lederer*), 1 ♀, Amanus Mts., 1 ♂; Syria, 1 ♂, Leech Coll.; Persian Gulf, Fao (*Cumming*), 1 ♂, 1 ♀; N. Persia, Scharud (*Cristoph*), 3 ♀; W. Turkestan, Sarawschan, Issyk-Kul, Ala Tau; W. Siberia, Altai; E. Turkestan, Ili; Madras, Nilgiris (*Hampson*), 2 ♂, 1 ♀, Palnis (*Campbell*), 1 ♂; Ceylon, Pundaloya (*Green*), 1 ♀. *Exp.* 36-46 millim.

Larva. Kirby, Butt. & Moths Eur. p. 271.

Green with a lateral yellow stripe. Food-plants: Potato, etc.

Sect. II. Fore wing with the apex somewhat produced and acute, the termen slightly excised below it.

A. Fore wing with the stigma below the cell Y-shaped, or U-shaped with a spot beyond its lower extremity ..... *gammoides.*

B. Fore wing with the stigma below the cell U-shaped, its lower extremity produced to a slight streak ..... *egena.*

C. Fore wing with the stigma below the cell represented by a downcurved streak ..... *feisthameli.*
D. Fore wing with the stigma below the cell faint and rounded.
a. Fore wing without golden cupreous patch beyond the oblique antemedial streak ..... *egenella.*
b. Fore wing with golden cupreous patch beyond the oblique antemedial streak ..... *illustrata.*

8255. Syngrapha gammoides.

Plusia gammoides, Blanch. Gay's Chile, Zool. vii. p. 84, pl. 6. f. 11 (1852), ♀.
Plusia chilensis, Butl. Trans. Ent. Soc. 1882, p. 138, ♂.

♀. Head and thorax deep red-brown mixed with grey, the tegulæ with slight medial dark line and grey tips; tarsi with pale rings; abdomen grey-brown, the crests chocolate-brown mixed with grey. Fore wing silvery-grey suffused with deep cuprous brown and

Fig. 108.—*Syngrapha gammoides*, ♂. ½.

slightly irrorated with blackish, the medial area with a deep cupreous brown patch below the cell; subbasal line silvery defined on each side by chocolate-brown, sinuous from costa to vein 1; antemedial line silvery defined on each side by chocolate-brown, excurved below costa, incurved in cell, then oblique and slightly sinuous; orbicular with grey outline and its centre defined by chocolate-brown; an oblique silvery **Y**-shaped stigma below the cell, its tail dilated into a spot; reniform with silvery outline defined on inner side by chocolate-brown, its centre defined by chocolate-brown and with black marks in its extremities, its outer edge constricted at middle and with black mark beyond it; postmedial line double, chocolate-brown filled in with silvery-grey, strongly bent outwards below costa,

then oblique and slightly waved, somewhat angled inwards at vein 2, some white points beyond it on costa; subterminal line black-brown, an oblique cupreous-brown shade from apex to its inner side at discal fold then defining it on inner side, the line excurved below costa, angled outwards below veins 4 and 3 and ending at tornus, a cupreous-brown shade beyond it at middle with waved outer edge; the termen pale grey, expanding into a triangular patch below vein 2; a terminal series of slight black striæ. Hind wing whitish suffused with cupreous-brown, the veins and terminal area deep cupreous-brown; cilia brown at base, white at tips; the underside white irrorated with brown, a slight discoidal lunule, postmedial line incurved below vein 6, and subterminal shade.

♂. Head and thorax rufous and grey; fore wing more silvery-grey with less cupreous brown suffusion especially before inner half of subterminal line.

Ab. 1. Fore wing with the stigma a **V**-mark with a spot beyond its lower extremity.

Hab. Chili, Callao (*J. J. Walker*), 1 ♀, Coquimbo (*J. J. Walker*), 5 ♂, 4 ♀, Valparaiso (*Edmonds*) 2 ♂, 2 ♀ type *chilensis*, Mulchen (*Elwes*), 1 ♂, 1 ♀. *Exp.* 38–54 millim.

8256. **Syngrapha egena.** (Plate CCXXXVI. fig. 24.)

Plusia egena, Guen. Noct. ii. p. 328 (1852); Druce, Biol. Centr.-Am., Het. i. p. 332; Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 8; Smith, Cat. Noct. N. Am. p. 251.

Head and thorax pale red-brown mixed with grey, the tegulæ and metathoracic crest tipped with grey; abdomen grey suffused with pale red-brown, the crests rufous tipped with grey. Fore wing purplish grey suffused with pale red-brown, the medial area below the cell deep rufous with patches of the ground-colour at middle of inner margin, and some golden cupreous below the cell and stigma; traces of a pale curved subbasal line from costa to median nervure; antemedial line fine, brown defined at sides by grey, angled outwards below costa, then oblique; orbicular slightly defined by brown, elliptical; a **U**-shaped stigma below the cell with slight silvery outline; reniform slightly defined by brown, oblique, oblong; postmedial line fine, brown defined on each side by grey, excurved below costa, incurved and slightly sinuous below vein 6, some white points beyond it on costa; subterminal line brown, oblique from apex to vein 5, excurved below veins 4 and 3, then incurved, a golden cupreous shade beyond it from apex to termen at vein 2, extending to just before the line at middle. Hind wing red-brown, the interspaces of basal half whitish except on inner area; cilia whitish with a red-brown line near base; the underside ochreous white irrorated with brown, a brown discoidal spot, postmedial line excurved below costa, subterminal shade, and fine terminal line.

Ab. 1. Much darker.

Hab. U.S.A., Florida, Indian R., 1 ♀; Mexico, Jalapa

(*Trujillo, Hoege*), 3 ♂, 4 ♀, Orizaba (*Flohr*), 1 ♀, Coatepec (*Brooks*), 1 ♂; Guatemala (*Rodriguez*), 1 ♂, Cerro Zunil (*Champion*), 1 ♀, Godman-Salvin Coll.; Haiti (*Tweedie*), 1 ♀; Colombia, Bogotá (*Stevens*), 1 ♂; Venezuela (*Moritz, Kaden, Dyson*), 2 ♂, 6 ♀; Brazil, Rio Janeiro, 1 ♀, Tijuca (*Wagner*), 1 ♀; Paraguay, Sapucay (*Foster*), 1 ♀; Argentina, Goya (*Perrins*), 1 ♂, La Rioja (*Giacomeli*), 1 ♀, Buenos Ayres (*O. Thomas, Wilkinson*), 6 ♂, 2 ♀. *Exp.* 40–50 millim.

8257. **Syngrapha feisthameli.** (Plate CCXXXVI. fig. 25.)

Plusia feisthamelii, Guen. Noct. ii. p. 329 (1852).

♂. Head and thorax violaceous white mixed with red-brown, a whitish line between antennæ; abdomen brownish grey, the crests chocolate-brown at tips. Fore wing violaceous white irrorated with red-brown, the medial area below the cell chocolate-brown with a golden gloss except at inner margin, the subterminal area suffused with golden brown; subbasal line fine, whitish slightly defined on each side by brown, from costa to vein 1; antemedial line whitish slightly defined on each side by brown, excurved below costa, incurved in cell, then oblique; orbicular with violaceous annulus slightly defined by brown, elliptical, inwardly oblique; reniform with violaceous outline and its centre defined by brown, angled inwards along median nervure to near the antemedial line and defined below by a curved silvery streak; postmedial line violaceous defined on outer side by chocolate-brown, slightly bent outwards below costa, oblique to vein 5, then obliquely incurved, some pale points beyond it on costa; subterminal line indistinct, dark, incurved below discal fold and slightly angled outwards at submedian fold; a fine waved dark terminal line defined on inner side by whitish from apex to below vein 4. Hind wing pale cupreous brown; cilia white with a slight brown line through them; the underside whitish suffused with brown, an indistinct diffused postmedial line.

Hab. Fr. Guiana, Cayenne, St. Jean Maroni (*Schaus*), 1 ♂. *Exp.* 36 millim.

8258. **Syngrapha egenella.**

Plusia egenella, Herr.-Schäff. Corresp.-blatt. zool.-min. Ver. Regensb. xxii. p. 183 (1868).
Plusia abeona, Druce, Biol. Centr.-Am., Het. i. p. 332, pl. 30. f. 16 (1889).

♂. Head, thorax, and abdomen red-brown mixed with grey. Fore wing pale pinkish grey mixed with red-brown: subbasal line represented by a greyish striga from costa; antemedial line greyish, slightly waved, oblique below the cell where it is defined on outer side by a narrow oblique whitish band from below the orbicular, which has a greyish annulus and its centre defined by red-brown, round; a faint whitish rounded stigma below the cell; reniform with red-brown centre and slight grey annulus, figure-of-eight-shaped; the medial area with three indistinct oblique red-brown lines from

cell to inner margin; postmedial line diffused, red-brown, bent outwards below costa, then oblique, met at vein 6 by a narrow oblique whitish band from costa near apex which then defines its outer side, a golden cupreous patch beyond it from just below costa to beyond lower angle of cell, then bent outwards to termen below vein 2; subterminal line hardly traceable on the golden patch, then brown defined on outer side by whitish; a fine whitish line just before termen from just below costa, ending on termen at vein 3. Hind wing whitish, the veins and terminal area cupreous brown; cilia white; the underside with the costal and terminal areas irrorated with brown, a brownish postmedial line from costa to vein 5, and subterminal shade.

Hab. Panama, Chiriqui (*Champion*), 1 ♂ type *abeona*, Godman-Salvin Coll.; Cuba, San Cristobal. *Exp.* 36 millim.

8259. Syngrapha illustrata.

Plusia illustrata, Guen. Noct. ii. p. 328 (1852).
Plusia roxana, Druce, A. M. N. H. (6) xiii. p. 362 (1894); id. Biol. Centr.-Am., Het. ii. p. 503, pl. 96. f. 11.

♀. Head, thorax, and abdomen grey mixed with brown. Fore wing grey suffused with pale brown and slightly irrorated with dark brown; a faint grey subbasal line from costa to vein 1; antemedial line indistinct, grey, angled inwards in cell and oblique below the cell, an obliquely curved silvery-whitish shade beyond it arising in end of cell and with oblique golden cupreous patch beyond it in submedian interspace; orbicular with faint whitish outline, constricted at middle; a faint whitish rounded stigma below the cell; reniform faintly defined by whitish, constricted at middle and produced at upper extremity; two faint whitish medial lines from cell to inner margin; postmedial line silvery-whitish, bent outwards below costa, then oblique, interrupted above vein 4 by a deep golden cupreous wedge-shaped patch arising below apex and from termen at vein 2 and extending to lower angle of cell, met at vein 5 by a silvery-white shade from apex; a white subterminal line from vein 2 to tornus. Hind wing whitish tinged with brown, the veins and terminal area brown; cilia white; the underside with faint postmedial line.

Hab. Mexico, Jalapa (*Trujillo*), 1 ♀ type *roxana*, Godman-Salvin Coll.; Haiti; Brazil, Espiritu Santo, 1 ♀. *Exp.* 36–40 millim.

Genus **PLUSIOPALPA.**

	Type.
Plusiopalpa, Holl. Psyche, vii. p. 9 (1894)	*adrasta.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and with a tuft of hair behind at extremity, the 3rd rather long and triangularly fringed with hair in front and behind; frons smooth with large tuft of hair; eyes large, round; antennæ of male minutely ciliated; thorax clothed with hair and scales mixed, the metathorax with large divided crest;

fore and mid tibiæ moderately fringed with hair, the hind tibiæ smoothly scaled; abdomen with dorsal crests on three basal segments, the crest on 1st segment large. Fore wing rather long and narrow, the costa arched towards apex which is somewhat produced, the termen evenly curved and slightly crenulate, the tornus with scale-tooth; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the postmedial line strongly angled inwards in submedian fold ..... *camptogamma.*
B. Fore wing with the postmedial line not angled inwards in submedian fold ..... *adrasta.*

8260. **Plusiopalpa camptogamma.** (Plate CCXXXVI. fig. 26.)

Polychrysia camptogamma, Hmpsn. A. M. N. H. (8) v. p. 430 (1910).

♀. Head and thorax red-brown mixed with some greyish; tarsi ringed with whitish; abdomen grey suffused with brown, whitish at base. Fore wing grey suffused with red-brown and with slight dark irroration; traces of a silvery streak in base of submedian fold; subbasal line represented by a curved silvery striga from costa; antemedial line represented by an oblique silvery striga from costa and inwardly oblique sinuous silvery line from cell to inner margin; an oblique silvery **Y**-shaped stigma below end of cell, filled in with greyish and with downcurved silvery streak above it in cell, the inner arm of the stigma sinuous, some golden cupreous suffusion beyond and below it; postmedial line indistinct, strongly bent outwards below costa and incurved below the tail of the **Y**-shaped stigma, where there is some silvery-white on it, some greyish points beyond it on costa and an oblique shade from below costa to its outer edge at vein 4; subterminal line greyish defined on inner side by dark brown from vein 7 to 2 and a wedge-shaped patch in submedian fold, excurved to termen at vein 6, then incurved, a dark patch beyond it at middle; a terminal series of black striæ defined on inner side by a greyish line. Hind wing brown with a slight cupreous tinge; cilia greyish with a dark line at base; the underside grey-brown with diffused grey-white medial shade.

Hab. Br. E. Africa, Kikuyu, Roromo (*Crawshay*), 1 ♀ type. *Exp.* 34 millim.

8261. **Plusiopalpa adrasta.**

Plusia adrasta, Feld. Reis. Nov. pl. 110. f. 35 (1874).
Plusiopalpa dichora, Holl. Psyche, vii. p. 9 (Jan. 1894).
Plusia crassipalpus, Hmpsn. Moths Ind. ii. p. 576 (March 1894).

Head and thorax red-brown mixed with pinkish grey; abdomen ochreous white, the crests red-brown. Fore wing red-brown mixed with pinkish grey, striated with brown and largely suffused with

golden copper; a curved dark streak from base of costa to the antemedial line below the cell, with an oblique white subbasal striga on its outer edge from costa; antemedial line brownish defined on inner side by pinkish grey, inwardly oblique below median nervure, a black point on its outer edge in the cell; an oblique **Y**-shaped silvery-white stigma at origin of vein 2 with a point above its outer arm in the cell; a silvery point in lower extremity of cell before the **V**-shaped dark reniform; some chocolate-brown suffusion below and beyond angle of cell; postmedial line

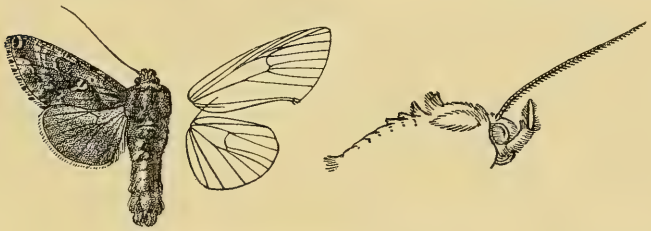


Fig. 109.—*Plusiopalpa adrasta*, ♂. ½.

slight, double, bent outwards below costa, then oblique, slightly waved below vein 5 and excurved below submedian fold; subterminal line greyish defined on inner side by black with chocolate-brown suffusion before it to below vein 5 and with oblique brown suffusion before it from the postmedial line at vein 2 to termen at vein 1, bidentate between veins 7, 6, then incurved and ending on termen at vein 1, some black-brown beyond it at apex; a fine black terminal line and grey line at base of cilia. Hind wing whitish suffused with cupreous brown except on basal and costal areas; the underside white irrorated with brown, a broad brown subterminal shade with its outer edge angled outwards at discal fold.

Hab. Gaboon, Ogové R.; Natal, Durban, in Coll. Clark Assam, Khásis, 1 ♂ type *crassipalpus*; Ceylon, Haputale (*Mackwood*), 1 ♂, Diyatalawa (*Mackwood*), 1 ♀; Java (*Horsfield*), 1 ♀; Celebes. *Exp.* 40–44 millim.

Genus **CHRYSOPTERA**.

	Type.
Chrysoptere, Latr. Fam. Nat. p. 476 (1825)	*c-aureum.*
Polychrysia, Hübn. Verz. p. 251 (1827)	*moneta.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and broadly scaled, the 3rd long and fringed with long hair in front; frons smooth, with large tuft of hair; eyes large, round, overhung by long cilia; antennæ of male minutely ciliated; thorax clothed with hair and hair-like scales mixed with some scales, the patagia fringed with long scales above, the meso- and metathorax with large divided crest; tibiæ fringed with long hair; abdomen with dorsal series of crests, the crests on 1st and 3rd segments larger. Fore wing with the costa arched towards apex which is somewhat produced, the termen typically evenly curved and not crenulate; veins 3 and

5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Fore wing with the termen excised below apex and excurved at middle.

*8262. Chrysoptera sica.

Plusia sica, Græser, Berl. Ent. Zeit. xxxv. p. 77 (1890); John, Hor. Soc. Ent. Ross. xxxix. p. 251, pl. xiv. f. 22; Staud. Cat. Lep. pal. p. 235.

Head and thorax yellow tinged with rufous and irrorated with a few dark brown scales; tegulæ with blackish line at middle, the tips of tegulæ, patagia, and metathoracic crest red-brown and white; legs red-brown and yellowish; abdomen whitish irrorated with brown, the crests yellow tipped with red-brown and white. Fore wing with the ground-colour of the basal area and inner area to the cell

Fig. 110.—*Chrysoptera sica*, ♂. ½.

and vein 2 pale purplish pink, the rest of wing metallic golden, the whole wing suffused in parts with red-brown and irrorated with black, the veins streaked with red-brown; antemedial line red-brown, excurved below costa, incurved in cell, then excurved; orbicular with whitish annulus defined at sides by brown, narrow, oblique; a silvery-white oblique elongate V-shaped stigma below the cell, its extremity rather bent outwards; reniform with whitish annulus defined by brown, constricted at middle; postmedial line double, red-brown filled in with whitish, slightly bent outwards below costa and incurved at discal fold, oblique and slightly sinuous below vein 4 and excurved below submedian fold, some white points beyond it on costa; subterminal line red-brown, slightly dentate, arising at vein 7, angled inwards at discal and submedian folds and excurved at middle; a dark brown terminal line. Hind wing

whitish suffused with red-brown especially on terminal half; cilia white at tips; the underside white tinged and irrorated with brown and with traces of postmedial and subterminal lines.

Hab. E. Siberia, Amurland, Raddefka, type † ♀ in Coll. Püngeler; Manchuria. *Exp.* 36 millim.

Sect. II. Fore wing with the termen evenly curved.

A. Fore wing with the postmedial line angled outwards to below apex.
  a. Fore wing with the subterminal line angled inwards to the postmedial line at vein 5 ..... *micadina*.
  b. Fore wing with the subterminal line not angled inwards to the postmedial line at vein 5 ..... *c-aureum*.
B. Fore wing with the postmedial line not angled outwards to below apex.
  a. Fore wing red-brown suffused in parts with gold ..... *splendida*.
  b. Fore wing metallic golden ..... *aurata*.
  c. Fore wing whitish tinged with red-brown.
    a^1. Fore wing with the stigma below the cell U-shaped ... *moneta*.
    b^1. Fore wing with the stigma below the cell oblique V-shaped ..... *morigera*.

8263. **Chrysoptera micadina.**

Plusia mikadina, Butl. A. M. N. H. (5) i. p. 202 (1878); id. Ill. Het. B.M. iii. p. 22, pl. 46. f. 7; Staud. Cat. Lep. pal. p. 235.

Head and thorax reddish brown mixed with blue-grey; antennæ white; palpi reddish brown; pectus whitish; abdomen whitish tinged with red-brown, the crests red-brown. Fore wing pinkish suffused with purplish grey and slightly irrorated with brown, the area before the postmedial line below submedian fold and the terminal area brilliant gold; subbasal line represented by a red-brown striga from costa, a red-brown patch beyond it with golden spots on it below costa and cell; antemedial line slight, double, red-brown, angled outwards below costa, then oblique, slightly waved, and retracted to inner margin; orbicular represented by two obliquely placed spots defined by brown, the lower minute; an oblique elliptical spot defined by brown at origin of vein 2, its lower part filled in with a golden comma-shaped mark; reniform represented by two small brown annuli defined by greyish; medial line brown, oblique and rather diffused to the reniform, then inwardly oblique; postmedial line double, brown filled in with purplish grey and defined on outer side by purplish grey with a brown shade beyond it, bent outwards below costa, oblique to below vein 7, then obliquely incurved; traces of a red-brown subterminal line, excurved below vein 7 and oblique to tornus; a brown terminal line defined on inner side by grey towards apex. Hind wing pale cupreous brown, the cilia pale rufous; the underside ochreous white irrorated with brown, diffused curved brown medial and postmedial lines.

Hab. E. Siberia, Ussuri; Japan, Hakodaté, 1 ♂ type, Oiwaké (*Pryer*), 1 ♀, Fushiki (*Leech*), 1 ♂, Tokio (*Maries*), 1 ♀. *Exp.* 34–42 millim.

8264. Chrysoptera c-aureum.

Phalæna c-aureum, Knoch, Beitr. i. p. 7, pl. 1. f. 2 (1781); Esp. Schmett. iv. pl. 110. f. 1; Staud. Cat. Lep. pal. p. 235.
Noctua concha, Fabr. Mant. Ins. ii. p. 161 (1787); Hübn. Eur. Schmett., Noct. ff. 287 (187), 458; Dup. Lép. Fr. vii. 2. p. 66, pl. 139. f. 3; Frr. Beitr. pl. 76.

Head and thorax dark brown mixed with blue-grey, the patagia and mesothoracic crest with some rufous; antennæ white; palpi, frons, and pectus in front dark brown, the hinder part of pectus whitish; abdomen grey-brown, the crests rufous. Fore wing

Fig. 111.—*Chrysoptera c-aureum*, ♂. ½.

pinkish suffused with purplish grey and slightly striated with brown, brilliant gold spots before the postmedial line above and below vein 1 and the terminal area brilliant gold; subbasal line indistinctly double, red-brown, from costa to submedian fold, some red-brown suffusion beyond it with a gold spot on subcostal nervure; antemedial line double, brown, angled outwards below costa and inwards on median nervure, then excurved and sinuous, an oblique brown bar above it from costa; orbicular indistinct, brownish, represented by two obliquely placed spots, the lower minute; an elliptical spot defined by brown at origin of vein 2 with a golden U-shaped mark in its lower part; reniform very narrow and strongly constricted at middle, with slightly greyish annulus; medial line brown, diffused and oblique to the reniform, then inwardly oblique and sinuous; postmedial line double, brown filled in with grey, bent outwards below costa, oblique to below vein 7, then inwardly

oblique and slightly sinuous, some brown suffusion before it and a brown shade beyond it; subterminal line brownish, waved, excurved below vein 7 and incurved below discal fold; a brown terminal line. Hind wing grey-brown; the underside whitish irrorated with brown, an oblique diffused brown medial line and postmedial line oblique below discal fold.

Hab. Belgium; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; N. Italy; S. Scandinavia; S. Russia; Armenia; W. Siberia, Altai. *Exp.* 40–46 millim.

Larva. Kirby, Butt. & Moths Eur. p. 267; Hffm. Raup. p. 132, pl. 35. f. 2.

Humped; green, with three white longitudinal lines on somites 2 to 4 and oblique dark green stripes broadly bordered by white from dorsum to sides of preceding somites; the three terminal somites white. Food-plants: *Thalictrum aquilegifolium* and *Aquilegia vulgaris*. 9–4.

8265. Chrysoptera splendida.

Deva splendida, Butl. A. M. N. H. (5) i. p. 203 (1878); id. Ill. Het. B.M. iii. p. 23, pl. 46. f. 8; Staud. Rom. Mém. vi. p. 537, pl. 10. f. 8; id. Cat. Lep. pal. p. 235.

Plusia intractata, Staud. Stett. Ent. Zeit. 1888, p. 262.

Head and thorax red-brown mixed with pink, some of the scales tipped with grey; antennæ whitish; pectus ochreous white behind; abdomen pale red-brown, the crests bright red-brown tipped with grey, the ventral surface whitish. Fore wing bright red-brown mixed with greyish and irrorated with a few black scales, the area before inner half of the postmedial line and the terminal area suffused with gold; subbasal line represented by double white striæ from costa; antemedial line white defined on inner side by greyish, angled outwards below costa, then obliquely curved to inner margin near base; orbicular defined by white, elliptical, conjoined to a stigma defined by white below the cell, its inner side produced to a point on median nervure confluent with the antemedial line and its lower extremity somewhat produced; reniform slightly defined by whitish, narrow, oblique, a black point in its upper extremity; postmedial line slight, whitish, bent outwards below costa, then double, oblique, sinuous, slightly bent outwards to inner margin, some whitish points beyond it on costa; subterminal line brown, defined on outer side by whitish towards costa and inner margin, excurved below vein 7 and at middle and ending at tornus; a terminal white line except towards tornus; cilia red-brown mixed with whitish. Hind wing cupreous red-brown, the cilia white at tips; the underside white irrorated with red-brown, the terminal area suffused with brown, a brown postmedial line excurved below costa, and subterminal shade.

Hab. E. Siberia, Ussuri, 1 ♂; Japan, Yesso (*Pryer*), 1 ♂, Hakodaté, 2 ♂ type, Tokio (*Maries*), 1 ♀, Yokohama (*Pryer*), 1 ♂, 3 ♀. *Exp.* 32–42 millim.

*8266. **Chrysoptera aurata.** (Plate CCXXXVI. fig. 27.)

Plusia aurata, Staud. Stett. Ent. Zeit. 1888, p. 260; id. Rom. Mém. vi. p. 536, pl. 10. f. 6; id. Cat. Lep. pal. p. 235.

Head and thorax yellow tinged with rufous and with a few dark brown scales, the metathoracic crest red-brown and white at tip; palpi with red-brown streak at side of 2nd joint, the 3rd joint mostly dark brown; abdomen yellowish white, the crests red-brown and white at tips. Fore wing metallic golden slightly irrorated with red-brown, the veins streaked with red-brown; a red-brown subbasal striga from costa; antemedial line slight, red-brown, strongly excurved; orbicular slightly defined by red-brown, oblique elliptical, conjoined to a rounded spot below the cell; reniform very indistinctly defined by red-brown, strongly constricted at middle and with black point beyond its upper extremity; medial line dark red-brown, rather diffused at costa, angled outwards to lower angle of cell, then oblique; postmedial line red-brown, oblique to below vein 7, angled inwards at discal fold, excurved at middle, then oblique and slightly sinuous; subterminal line red-brown, excurved to discal fold in which there is a streak before it extending to the postmedial line, then faint, oblique, slightly angled outwards below vein 4, a pinkish white patch beyond it above tornus; a red-brown terminal line. Hind wing pale yellow tinged with brown, the veins browner; a red-brown terminal line; the underside slightly irrorated with red-brown, an indistinct brown medial line and postmedial line strongly excurved below costa.

Hab. E. Siberia, Amurland, Raddefka, in Coll. Püngeler, Ussuri. *Exp.* 40 millim.

8267. **Chrysoptera moneta.**

Noctua moneta, Fabr. Mant. Ins. ii. p. 162 (1787); Hübn. Eur. Schmett., Noct. ff. 189, 289, 773–5; Dup. Lép. Fr. vii. 2. p. 63, pl. 139. f. 2; Frr. Beitr. pl. 71; South, Entom. xxiii. p. 287, pl. 3. f. 6 (1890); Staud. Cat. Lep. pal. p. 235; Dyar, Cat. Lep. N. Am. p. 198.
Noctua flavago, Esp. Schmett. iv. pl. 112. f. 1 (1787).
Noctua napelli, Vill. Ent. Linn. p. 275, pl. 5. f. 21 (1789).
Noctua argyritis, Esp. Schmett. iv. p. 218 (1792).
Plusia esmeralda, Oberth. Ét. Ent. v. p. 85 (1880).
Deva trabea, Smith, Ent. News Philad. vii. p. 29 (1896).

Head and thorax white tinged with rufous and mixed with red-brown and black scales; palpi in front and behind with red-brown streaks on 2nd joint and dark brown on 3rd joint; abdomen white tinged with brown, the crests red-brown at tips. Fore wing pale bright rufous irrorated with some black scales and largely suffused with silvery-gold especially on inner medial area, apical part of costal area, and middle of terminal area; subbasal line double, red-brown filled in with gold and with some gold before and beyond it, from costa to submedian fold; antemedial line double, red-brown

filled in with gold and with some gold before and beyond it, excurved below costa, incurved in cell, then excurved; orbicular defined by red-brown, its annulus formed by golden silvery spots, extending almost to submedian fold, its inner edge excised; a curved red-brown medial shade with the deeper red-brown medial line on it, obliquely incurved to lower angle of cell, then oblique; postmedial line double, red-brown filled in with gold and with some gold before and beyond it, oblique to below vein 7, then inwardly oblique, sinuous, and slightly excurved at vein 4; subterminal line red-brown, oblique to below vein 7, then waved, excurved at middle; the apical golden patch defined by bright rufous below, angled inwards in discal fold; a red-brown terminal line. Hind wing pale cupreous red-brown, the costa whitish; cilia whitish with a red-brown line through them; the underside white irrorated with brown, the costal area with blackish, a slight brown discoidal striga and rather diffused postmedial line excurved below costa.

Ab. 1. *esmeralda*. Head, thorax, abdomen, and wings with the rufous tones replaced by pale yellowish brown.—Alberta, E. & W. Turkestan, Mongolia, Siberia, N. China.

Hab. Canada, Alberta, Calgary (*Wolley-Dod*), 3 ♂, 3 ♀; Britain; France, Sand Coll.; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland, Zeller Coll.; Spain, Andalusia; Russia, Zeller Coll.; Armenia; W. Turkestan, Issyk-Kul, Ala Tau; W. Siberia, Altai; E. Turkestan, Ili; Mongolia, Changai Mts.; E. Siberia, Dahuria, Ussuri; N. China. *Exp.* 36–44 millim.

Larva. Meyr. Brit. Lep. p. 156; Barrett, Lep. Brit. vi. p. 104, pl. 241. f. 2; Hffm. Raup. p. 132, pl. 35. f. 3.

Grass-green with white dots; dorsal line dark; lateral line white. Food-plants: *Aconitum napellus*, *Delphinium*, and *Trollius europæus*, both leaves and flowers. 5–6 and 7–8.

8268. **Chrysoptera morigera.** (Plate CCXXXVI. fig. 28.)

Deva morigera, H. Edw. Ent. Am. ii. p. 169 (1887); Smith, Cat. Noct. N. Am. p. 247.

♂. Head, thorax, and abdomen white slightly mixed with red-brown. Fore wing white mostly suffused with pale red-brown and irrorated with a few black scales; a curved subbasal white striga from costa defined on inner side by red-brown; antemedial line brown with whitish suffusion before it, angled outwards below costa, then obliquely curved; orbicular and the stigma below the cell defined by white, both narrow oblique bar-shaped; reniform faintly defined by whitish; postmedial line white, angled outwards below costa, then oblique, sinuous, and incurved in submedian interspace; subterminal line diffused, whitish defined on inner side by red-brown suffusion, excurved below vein 7, excurved and somewhat dentate at middle, and ending at tornus; a fine dark terminal line defined on inner side by white; a white line at base of cilia. Hind wing whitish tinged with cupreous brown especially on terminal area; a

faint dark postmedial line with whiter shade beyond it; a whitish line at base of cilia; the underside whiter irrorated with brown, the postmedial line more distinct and rather diffused.

Hab. U.S.A., Colorado (*Cockerell*), 1 ♂. *Exp.* 40 millim.

Genus **EOSPHOROPTERYX.**

Type.

Eosphoropteryx, Dyar, Journ. N.Y. Ent. Soc. x. p. 80 (1902)... *thyatyroides.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to well above vertex of head and broadly fringed with scales in front, the 3rd long; frons smooth, with tuft of hair; eyes large, round, slightly overhung by cilia; antennæ of male ciliated; thorax clothed with hair and hair-like scales, the meso- and metathorax with large divided crest; tibiæ slightly fringed with hair; abdomen with small basal crest and very large crest on 3rd segment. Fore wing with the apex rounded, the termen evenly curved and slightly crenulate, the inner margin excised towards tornus which has a scale-tooth; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

8269. **Eosphoropteryx thyatyroides.**

Plusia thyatyroides, Guen. Noct. ii. p. 337, pl. 11. f. 8 (1852); Ottolengui, J. N.Y. Ent. Soc. x. pl. ix. f. 12; Smith, Cat. Noct. N. Am. p. 249.

Head and thorax pale grey-brown; frons with white bar above; antennæ white towards base and with some black scales on basal joint above; palpi rufous; tegulæ with black line at middle and

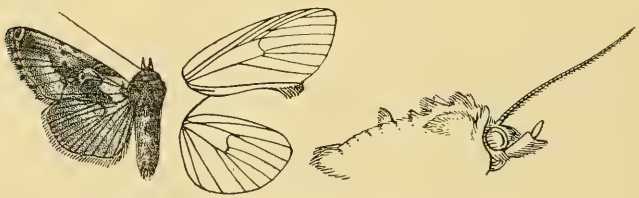


Fig. 112.—*Eosphoropteryx thyatyroides*, ♂. ½.

white tips; patagia with some black at shoulders and white line near base; the dorsal crests bright rufous; pectus and legs white mixed with grey-brown, the tarsi brown ringed with white; abdomen white dorsally suffused with grey-brown, the crests rufous, the anal tuft red-brown above. Fore wing white suffused with purplish pink and slightly irrorated with black, the medial area silvery except towards costa; an oblique black-brown fascia edged with rufous from costa near base to the antemedial line at subcostal nervure; antemedial line brown defined on inner side by

white, angled outwards below costa, then oblique, sinuous ; orbicular with slight white annulus, oblique elliptical; the stigma placed on an oblique rufous fascia from cell to the postmedial line, silvery-white, iregularly V-shaped with a small spot beyond its lower extremity; reniform very faintly defined by brownish and very narrow, a small black spot in its upper part and two points in lower; postmedial line double, red-brown, obsolescent towards costa, slightly bent outwards below costa, oblique to vein 6, incurved at discal fold and slightly excurved at middle, angled inwards at vein 2, then excurved, some yellow before it on inner area and some white points with brown streaks between them beyond it on costa; an obliquely curved red-brown shade from apex to near the postmedial line with some silvery suffusion below its extremity; subterminal line white and oblique to vein 7, then indistinct, waved, and incurved; a fine dark terminal line with white line before it from apex to vein 2. Hind wing whitish suffused with brown with a slight golden gloss; an oblique whitish postmedial shade; cilia white with small blackish spots at the veins; the underside ochreous white, a sinuous brown postmedial line and subterminal shade.

Hab. CANADA, Ottawa (*Young*), 1 ♀, Ontario, Orillia (*Bush*), 2 ♂; U.S.A., Northern, Central, and Middle States, New York (*Doubleday*), 1 ♂, 1 ♀ type, Evans Center (*Grote*), 1 ♂, 1 ♀, Washington, 1 ♀. *Exp.* 36–42 millim.

Genus **PSEUDEVA**, nov.

Type, *P. purpurigera.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and rather broadly scaled, the 3rd rather long and fringed with hair in front; frons smooth, with tuft of hair; eyes large, round, overhung by long cilia; antennæ of male ciliated; thorax clothed with hair and hair-like scales, the patagia fringed with long hair-like scales above and at extremity, the prothorax with spreading crest, the metathorax with very large crest; fore tibiæ fringed with long hair, the mid and hind tibiæ moderately fringed with hair; abdomen with dorsal crests on basal segments, the crests on 1st and 3rd segments large, and with lateral tufts of hair. Fore wing with the apex produced and acute, the termen excised below apex and excurved at middle, not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from well above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the postmedial line double, angled outwards below costa, then oblique and straight ..... *purpurigera.*

B. Fore wing with the postmedial line single, excurved below costa, then oblique and almost straight; hind wing white, the termen suffused with brown ..... *palligera.*

C. Fore wing with the postmedial line single, excurved below costa, then oblique and incurved at middle; hind wing wholly suffused with brown .... *rubigera.*

8270. Pseudeva purpurigera.

Deva purpurigera, Wlk. xv. 1791 (1858); Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 1; Smith, Cat. Noct. N. Am. p. 246.

Head and thorax red-brown mixed with yellow and pink; antennæ whitish; pectus behind and hind legs whitish; abdomen whitish irrorated with brown, the crests red-brown. Fore wing yellow suffused with rufous and in parts with pink and sparsely irrorated with black; subbasal line represented by a slight red-brown striga from costa and small dark spot below the cell, a curved red-brown shade beyond it from costa; antemedial line indistinct, double, red-brown, oblique, slightly bent outwards at median nervure; orbicular

Fig. 113.—*Pseudeva purpurigera*, ♂. ½.

slightly defined by blackish brown, rather diamond-shaped; reniform incompletely defined by blackish brown, narrow and strongly constricted at middle; antemedial line double, red-brown, excurved to below vein 7, then oblique and with a small black spot on its outer edge at submedian fold, defined on outer side by an oblique pinkish shade arising from apex; subterminal line blackish, excurved below costa, angled outwards above vein 3, and ending at tornus; a fine blackish terminal line except towards tornus, defined on inner side by a pink line to vein 4; some golden suffusion at middle of terminal area and on inner area towards tornus. Hind wing white tinged with cupreous brown except on costal area to near apex, the terminal area slightly darker; a fine brown terminal line defined on inner side by a white line to vein 2; cilia white; the underside white slightly irrorated with brown, a brown discoidal point, slight curved postmedial line, and somewhat diffused subterminal line.

Hab. Canada, Ontario, Orillia (*Bush*), 1 ♂ type; U.S.A.,

Northern and Eastern States, Massachusetts, Amhurst (*Packard*), 1 ♂, 1 ♀, New York, Colorado, New Mexico. *Exp.* 32–36 millim.

Larva. Dyar, J. N.Y. Ent. Soc. iv. p. 145.

Head small, green with black ocelli; body with somites 4, 5, 6 and 11 slightly enlarged, the tubercles low rounded cones on the prominent somites; translucent green with oblique white bands; a white lateral band contracted at the thoracic incisures, interrupted and produced subventrally at the abdominal incisures; a narrow double dorsal line; 1st two pairs of abdominal prolegs absent. Food-plant, *Thalictrum.* 5.

8271. **Pseudeva palligera.** (Plate CCXXXVI. fig. 29.)

Deva palligera, Grote, Papilio, i. p. 35 (1881); Smith, Cat. Noct. N. Am. p. 247.

Head and thorax rufous mixed with yellow; antennæ white; fore tarsi, pectus behind, and hind legs white; abdomen white slightly irrorated with brown, the crests rufous. Fore wing pale yellow tinged with rufous and slightly irrorated with red-brown, some pinkish in and beyond end of cell, on postmedial area and on terminal area above tornus, the veins streaked with red-brown; subbasal line represented by a curved red-brown striga from costa with a slight curved red-brown shade beyond it; antemedial line red-brown, inwardly oblique, slightly incurved in cell, then excurved; orbicular defined by red-brown, round, an elliptical spot defined by red-brown below it; reniform defined by red-brown, narrow, oblique; postmedial line red-brown, defined on outer side by a whitish shade diffused to apex to vein 4, then by a white line, very obliquely excurved to below vein 7, then inwardly oblique and almost straight; a fine red-brown terminal line defined on inner side by a pinkish white line to vein 3. Hind wing white, the terminal area with a slight cupreous brown shade; a slight somewhat sinuous brown postmedial line; a fine brown terminal line with a slight white line before it to vein 2; the underside white, the costal area faintly tinged with rufous and irrorated with brown, a curved brown postmedial line.

Hab. U.S.A., Washington, 1 ♂, Colorado, California, Colusa Co. (*Walsingham*), 4 ♂, 1 ♀, Sierra Nevada, 2 ♂ type. *Exp.* 38 millim.

8272. **Pseudeva rubigera,** n. sp. (Plate CCXXXVI. fig. 30.)

♂. Head and thorax rufous mixed with yellow; antennæ whitish; palpi, pectus in front, and legs red-brown; abdomen white tinged with red-brown, the crests rufous. Fore wing yellow suffused with rufous and slightly irrorated with red-brown, the postmedial area and terminal area above tornus with a slight pinkish tinge, the veins streaked with red-brown; subbasal line slight, curved, red-brown, from costa to median nervure, a slight curved red-brown

shade beyond it; orbicular defined by red-brown, round, an elliptical spot defined by red-brown below it; reniform defined by red-brown, narrow, placed on a red-brown medial shade which below the cell is approximated to the postmedial red-brown line, which is strongly excurved below costa, then oblique, slightly incurved to vein 2, then slightly excurved, defined on outer side by a pinkish shade arising from apex and extending to before it on costal area; subterminal line red-brown, excurved below vein 7 and at middle, and ending at tornus; a fine red-brown terminal line defined on inner side by a pink line to vein 4. Hind wing whitish suffused with cupreous brown; a slight oblique brown postmedial line defined on outer side by whitish; a fine brown terminal line defined on inner side by whitish to vein 2; the underside white faintly tinged with rufous and irrorated with red-brown, indistinct diffused postmedial and subterminal lines.

Hab. U.S.A., California (*D'Urban*), 1 ♂ type. *Exp.* 40 millim.

Genus **PLUSIDIA.**

Type.

Plusidia, Butl. Ill. Het. B. M. iii. p. 27 (1879) ..... *cheiranthi.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and rather broadly scaled in front, the 3rd rather long; frons smooth, with tuft of hair; eyes large, round, overhung by long cilia; antennæ of male ciliated; thorax clothed with hair and hair-like scales, the patagia dilated with scales at extremities, the metathorax with large spreading crest; fore tibiæ broadly fringed with hair on outer side, the mid and hind tibiæ smoothly scaled; abdomen with dorsal crests on basal segments, the crests on 1st and 3rd segments large. Fore wing with the apex rounded, the termen evenly curved and not crenulate; a small scale-tooth at tornus; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from well above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

8273. **Plusidia cheiranthi.**

Noctua cheiranthi, Tausch. Mém. Mosc. ii. p. 322, pl. 20. f. 6 (1809); Friv. Tudom. Akad. Evkon. xi. iv. pp. 53, 160, pl. 7. f. 6; Mill. Icones, iii. p. 429, pl. 126. ff. 1–3; Staud. Cat. Lep. pal. p. 236.
Plusia eugenia, Ev. Bull. Mosc. 1841, i. p. 32, pl. 3. ff. 3, 4; Herr.-Schäff. Eur. Schmett., Noct. f. 267; Frr. Neue Beitr. p. 83, pl. 532. f. 2.
Plusidia abrostoloides, Butl. Ill. Het. B.M. iii. p. 28, pl. 47. f. 5 (1879).

Head and thorax pale red-brown; antennæ with the shaft white towards base; palpi deeper red-brown; tegulæ with white tips; patagia with oblique white line at middle, the tips and dorsal crest chocolate-brown with white tips; fore tibiæ chocolate-brown, the tarsi whitish; abdomen pale red-brown, the crests chocolate-brown tipped with white. Fore wing pale pinkish, the veins darker, the medial area striated with brown, the costal and terminal areas slightly irrorated with black; subbasal line black defined on each

side by white, oblique, from costa to vein 1, a rounded chocolate-brown patch beyond it and a patch below it on inner margin; antemedial line double, brown, curved; orbicular defined by brown, elliptical, a similar spot below it below the cell; reniform defined by brown; a reddish brown medial shade; postmedial line double, brown, filled in with white and the outer line black-brown at inner margin, oblique to vein 6 where it is angled outwards, then obliquely incurved; subterminal line whitish, defined on inner side by chocolate-brown to vein 5, then by a brown shade and with a rufous patch beyond it at apex, oblique to vein 6, then bent inwards to vein 5, then sinuous; a brown terminal line defined on inner side by white beyond the red apical patch. Hind wing reddish brown, an indistinct sinuous postmedial line with whitish

Fig. 114.– *Plusidia cheiranthi*, ♂. ½.

shade beyond it; the underside white tinged with red-brown, a slight discoidal lunule, sinuous postmedial line, and subterminal shade.

Ab. 1. Fore wing much paler; hind wing white faintly tinged with red-brown.

Hab. N.E. Germany, Zeller and Leech Colls., Silesia, Frey Coll.; Austria, Galicia; Hungary, D'Emmich Coll.; S. Russia, Urals; Armenia; W. Siberia, Altai; Mongolia; E. Siberia, Dahuria, Amurland, Ussuri; Japan, Hakodaté (*Whiteley*), 1 ♂, 1 ♀ type *abrostoloides*, Oiwaké (*Pryer*), 1 ♂, 1 ♀. *Exp.* 32–38 millim.

Larva. Kirby, Butt. & Moths Eur. p. 268; Hffm. Raup. p. 133, pl. 35. f. 4.

Green, with dorsal and subdorsal white lines on thoracic somites and oblique white streaks on abdominal somites; lateral line white; 11th somite humped. Food-plants, *Thalictrum* and *Aquilegia vulgaris*. 5.

Genus **PHYTOMETRA**.

	Type.
Phytometra, Haw. Lep. Brit. p. 254 (1809)	*festucæ*.
**Plusia*, Ochs. Schmett. Eur. iv. p. 89 (1816), non descr. nec Treit. 1826	*deaurata*.
Euchalcia, Hübn. Verz. p. 250 (1827)	*variabilis*.
Agrapha, Hübn. Verz. p. 250 (1827)	*ærea*.
Panchrysia, Hübn. Verz. p. 252 (1827)	*deaurata*.
Diachrysia, Hübn. Verz. p. 252 (1827)	*orichalcea*.
Chrysaspidia, Hübn. Verz. p. 252 (1827)	*bractea*.
Chrysodeixis, Hübn. Verz. p 252 (1827)	*chalcytes*.
Plusiotricha, Holl. Psyche, vii. p. 10 (1904)	*livida*.
Plusia, Hübn. Tent. ined.	*chrysitis*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd rather long; frons smooth, with large tuft of hair; eyes large, round, overhung by long cilia; antennæ of male typically minutely ciliated; thorax clothed with hair and hair-like scales, the patagia fringed with long scales above, the meso- and metathorax with large divided crest; tibiæ fringed on outer side with rather long hair; abdomen with dorsal series of crests, the crests on 1st and 3rd segments larger. Fore wing with the costa arched towards apex which is produced and acute, the termen evenly curved and not crenulate, the tornus with scale-tooth; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; veins 3, 4 from angle; 5 fully developed from just above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

Sect. I. Antennæ of male bipectinate with rather long branches, the apical part ciliated, of female with serrations ending in bristles.

8274. **Phytometra pterylota**.

Plusia pterylota, Meyr. Faun. Hawaii. iii. p. 348 (1904).

♂. Head and thorax bright rufous mixed with some ochreous and dark brown, some of the scales tipped with white; palpi, frons, and tegulæ mostly scarlet; abdomen whitish tinged with rufous, the crests rufous tipped with brown and grey. Fore wing golden yellow suffused in parts with scarlet and irrorated with brown, the costal area except towards base, the postmedial area, and the terminal area towards tornus more purplish grey; subbasal line represented by an oblique brown striga from costa defined on outer side by golden yellow; antemedial line brown defined on inner side by golden yellow, angled outwards below costa, interrupted in cell, then oblique and slightly retracted to inner margin; a curved silvery-white mark defined by brown at origin of vein 2, extending into the cell and with round silvery-white spot defined by brown beyond its lower extremity; reniform an oblique silvery-white bar

* *Plusia*, Treit. Schmett. Eur. v. (3) p. 134 (1826) type *amethystina* has precedence over *Telesilla*, Herr-Schäff. Cat. Lep. Phal. B.M. vii. p. 587.

defined by brown; medial line brown, diffused, oblique to the reniform, then inwardly oblique and bent inwards at submedian fold; postmedial line brown defined on inner side by golden yellow, slightly incurved below vein 4, then oblique; subterminal line brown, diffused on inner side, excurved below vein 7 and at middle;

Fig. 115.—*Phytometra pterylota*, ♂. ½.

a brown terminal line. Hind wing whitish suffused with ochreous brown, an indistinct oblique brown postmedial line; the underside more ochreous.

♀. Head and thorax dark chocolate-brown, the scarlet areas more prominent, some of the scales tipped with purple-grey; legs brown mixed with purple-grey, the fore legs with some scarlet in front; abdomen brown, the crests darker mixed with rufous and tipped with white, the ventral surface scarlet except at base and extremity; fore wing dark chocolate-brown with some scarlet suffusion beyond the subbasal striga and below end of cell, the middle of terminal area suffused with golden cupreous, some purple-grey suffusion before inner part of antemedial line, above and beyond end of cell, beyond the postmedial line, and on terminal area towards tornus, a golden yellow mark before the subterminal line between veins 3 and 2; hind wing brown, the cilia tipped with white.

Hab. Hawaii, S.E. Korlan Range, 1 ♂ type, Kilauea (*Perkins*), 1 ♀. *Exp.* 42 millim.

Sect. II. Antennæ of male bipectinate with short branches ending in long bristles, serrate towards apex.

8275. Phytometra psectrocera, n. sp.

♂. Head and thorax black-brown mixed with grey; palpi with the tip of 3rd joint white; antennæ with the shaft ringed with white towards base; spurs and tarsi ringed with white; abdomen dark brown mixed with grey. Fore wing dark brown tinged with grey and irrorated and striated with black, the inner half of medial area darker; subbasal line represented by a sinuous silvery striga

defined by black from costa and short oblique streak in submedian interspace; antemedial line silvery defined on each side by blackish, angled outwards below costa, then oblique sinuous; the silvery stigma consisting of a small lunule above median nervure and an oblique mark below the cell, its upper edge produced inwards to a point, its lower extremity rounded with a small round spot below it; reniform represented by a silvery bar forking above and below, its upper outer arm very slight and with a small black spot on its inner side; postmedial line silvery defined on each side by blackish, sinuous from costa to vein 4, then oblique and waved, angled inwards in submedian fold almost to the stigma, some pale points

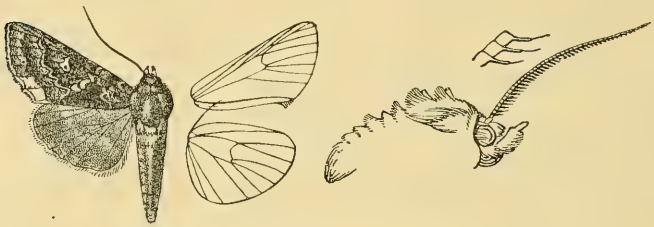


Fig. 116.—*Phytometra psectrocera*, ♂. ½.

beyond it on costa; subterminal line rather diffused, blackish, arising below costa, slightly angled outwards at vein 7, then sinuous, below vein 4 oblique and with silvery-whitish suffusion beyond it; a terminal series of small black lunules slightly defined on inner side by silvery-whitish; cilia with a fine whitish line at base. Hind wing dark reddish brown; an indistinct dark postmedial line oblique below vein 3, and diffused subterminal shade; the underside grey thickly irrorated with brown, the terminal area suffused with fuscous, traces of a medial line with dark discoidal striga on it, and a diffused postmedial line incurved below vein 3.

Hab. Hawaii, Maui, Campo Trail (*F. W. Terry*), 1 ♂ type. *Exp.* 44 millim.

Sect. III. Antennæ of male serrate.

A. Fore wing violaceous grey shaded with brown ..... *lavendula.*
B. Fore wing whitish shaded with bright red-brown..... *gerda.*

8276. **Phytometra lavendula.**

Plusia lavendula, Hmpsn. Ann. S. Afr. Mus. ii. p. 347 (1902).

♂. Head and thorax brown mixed with white; palpi with the 2nd joint brown at sides; a brown bar between antennæ; the tips of tegulæ, edges of patagia, and a line across their middle violaceous white; tarsi brown ringed with white; abdomen white faintly tinged with brown, the crests brown and white. Fore wing

pale violaceous grey irrorated with a few black scales and suffused in parts with brown, especially the medial area below the cell and the area before the subterminal line; subbasal line silvery-white defined on each side by black-brown, from costa to submedian fold; antemedial line silvery-white defined on each side by black-brown, excurved below costa, almost obsolete in cell, then excurved and slightly waved; orbicular a faint blackish **U**-shaped mark; an oblique silvery **Y**-shaped mark below the cell, defined by black and its arms filled in with grey; reniform defined by brown and with white striæ at inner and outer extremites below, slightly constricted at middle and angled inwards on median nervure; an indistinct diffused brown medial line, excurved to vein 2, then incurved; postmedial line double, brown filled in with violaceous grey, angled inwards at discal fold, oblique from vein 4 to submedian fold where

Fig. 117.—*Phytometra lavendula*, ♂. ½.

it is angled inwards, angled outwards at vein 1, some white striæ with dark streaks between them beyond it on costa; subterminal line white defined on inner side by brown suffusion, slightly incurved below costa and strongly at discal fold, angled outwards below vein 4, then incurved and ending at tornus; dentate brown shades before termen below apex and at middle; a fine waved dark terminal line with a pair of minute black spots at vein 4; cilia white, chequered with black at the veins. Hind wing white tinged with brown, the terminal area suffused with brown; a whitish subterminal mark at discal fold and terminal mark below vein 2; cilia white chequered with brown at the veins; the underside white with diffused brownish postmedial and subterminal lines.

Hab. Cape Colony, 1 ♂ type. *Exp.* 42 millim.

*8277. **Phytometra gerda.** (Plate CCXXXVII. fig. 1.)

Plusia gerda, Püng. Iris, xix. p. 224, pl. 8. f. 8 (1907).

♂. Head rufous; thorax whitish suffused with rufous; abdomen whitish suffused with brown, the crests rufous tipped with white, the anal tuft pale rufous. Fore wing brownish white sparsely striated with brown, the medial area red-brown below the cell and suffused with red-brown towards costa; antemedial line whitish slightly defined on inner side by red-brown, excurved below costa, incurved in cell, then obliquely excurved; the stigmata purple-

brown irrorated with grey, the orbicular defined by whitish, oblique U-shaped, the stigma below the cell defined by white, oblique V-shaped with its lower extremity slightly bent outwards, the reniform narrow and oblique above and angled outwards on median nervure; postmedial line white defined by red-brown, slightly on outer side, bent outwards below costa and incurved below vein 5; subterminal line white defined on inner side by rufous suffusion, slightly incurved at discal fold and incurved below vein 3, the area beyond it rufous towards apex and at middle; a red-brown terminal line defined on inner side by a fine white line from apex to vein 3; cilia rufous at apex and middle. Hind wing whitish suffused with purplish brown, an indistinct diffused incurved postmedial line and diffused subterminal line; cilia ochreous white; the underside ochreous white slightly irrorated with brown, the diffused lines more distinct.

Hab. TIBET, Kuku-noor, type † ♂ in Coll. Püngeler. *Exp.* 40 millim.

SECT. IV. Antennæ of male ciliated.

A. Abdomen of male with more or less developed lateral tufts of long hair towards extremity.

a. Hind tarsi of male with a comb of long spines at right angles to the tarsus on inner side of basal half of 1st joint.

a[1]. Hind tibiæ of male fringed with very long hair above; the anal tufts large.

a[2]. Hind tarsi of male with the basal joint fringed with long hair above.

8278. **Phytometra chalcopasta.**

Plusia chalcopasta, Hmpsn. J. Bomb. Nat. Hist. Soc. xxi. p. 1225 (1912).

Head and thorax dark reddish brown mixed with grey; antennæ

Fig. 118.—*Phytometra chalcopasta*, ♂. $\frac{1}{1}$.

ringed with white; tegulæ tipped with white; patagia with an oblique white line near base; the dorsal crest tipped with white;

tarsi ringed with white; abdomen reddish brown, the crests tipped with grey. Fore wing brown glossed with silvery-grey; subbasal line slight, silvery, excurved below costa and ending at vein 1; antemedial line slight, silvery, incurved in cell, angled outwards at median nervure, then oblique and slightly sinuous; orbicular with faint dark outline, rounded; an irregularly quadrate stigma with faint dark outline below the cell; reniform with faint dark outline, constricted at middle; postmedial line slight, dark, bent outwards below costa and oblique below discal fold, some whitish points beyond it on costa; subterminal line silvery slightly defined on inner side by reddish brown, oblique and almost straight from apex to tornus; a fine waved silvery terminal line from apex to vein 2. Hind wing glossy grey-brown; cilia with fine white line at base and white tips; the underside grey irrorated with fuscous brown, the base and inner area clothed with grey-brown hair, a dark discoidal striga, the postmedial area broadly brown.

Hab. ? N. India (*Walhouse*), 1 ♀; Madras, Gooty (*Campbell*), 1 ♀, Nilgiris (*Lindsay*, *Hampson*), 3 ♀; Ceylon, Maskeliya (*de Mowbray*), 1 ♂ type, Pattipola (*Mackwood*), 1 ♀. *Exp.* 38–42 millim.

b^2. (*Plusiotricha.*) Hind tarsi of male with the basal joint not fringed with hair above.
  a^3. Fore wing with the inner medial and terminal areas not golden.
    a^4. Fore wing without white point beyond the stigma below the cell and with white point at lower angle of cell ..... *livida.*
    b^4. Fore wing with white point beyond the stigma below the cell and without white point at lower angle of cell ..... *phocea.*
  b^3. Fore wing with the inner medial and terminal areas brilliant metallic gold ..... *æneofusa.*

*8279. **Phytometra livida.** (Plate CCXXXVII. fig. 2.)

Plusiotricha livida, Holl. Psyche, vii. p. 10, pl. xxi. f. 5 (1904).

♂. Head, thorax, and abdomen brown mixed with grey; tarsi fuscous with slight pale rings; the lateral anal tufts whitish and the genital tufts blackish. Fore wing dark brown mixed with grey and with a slight cupreous gloss; subbasal line represented by a slight pale striga from costa and two blackish marks below the cell; antemedial line slight, pale, oblique from costa to the upper edge of the narrow oblique orbicular, faintly defined by grey and inwardly oblique below the cell from the inner arm of an oblique **V**-shaped mark below the cell faintly defined by white and somewhat constricted at middle; some dark reddish brown suffusion at and below end of cell with a minute white point on it at lower angle of cell; postmedial line indistinct, double, minutely waved and somewhat angled inwards at submedian fold; the subterminal area suffused with cupreous brown with a slight whitish striga with

blackish mark beyond it on its outer edge above and below vein 4. Hind wing dark cupreous brown, the cilia greyish at tips; the underside with the basal half greyish brown, the terminal half fuscous, the termen greyish.

Hab. Gaboon, Ogowé R., type † ♂ in Coll. Holland. *Exp.* 36 millim.

8280. Phytometra phocea.

Plusia phocea, Hmpsn. A. M. N. H. (8) v. p. 433 (1910).

Head and thorax red-brown with a greyish tinge; tarsi ringed with whitish; abdomen pale ochreous brown, the basal crest and ventral surface grey-brown. Fore wing red-brown with a silvery grey gloss; subbasal line slight, whitish, from costa to vein 1; antemedial line obsolete on costal half, slight oblique and silvery-from cell to inner margin, slightly defined on inner side by dark brown and on outer by a dark shade expanding into a triangular patch below the stigma, which is indistinct silvery **U**-shaped with a silvery-white point beyond its lower extremity; reniform very

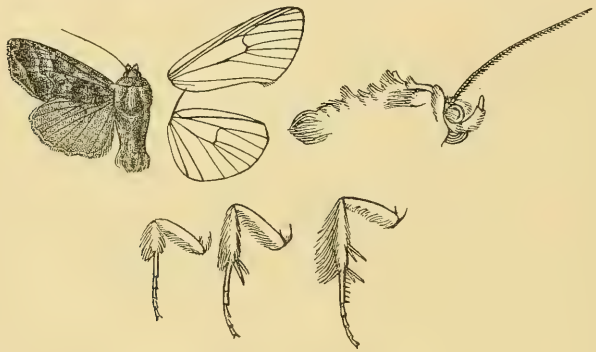


Fig. 119.—*Phytometra phocea*, ♂. ½.

indistinct, dark brown with slight silvery points on its inner and outer edges, rather quadrate; an indistinct brown spot at middle of costa and oblique shade from lower angle of cell to inner margin; postmedial line slight, silvery defined on each side by dark brown, excurved below costa, then oblique, excurved at middle and bent outwards below submedian fold; subterminal line silvery-grey defined on inner side by dark brown suffusion, angled outwards at vein 7, then slightly incurved and oblique to tornus, some dark suffusion beyond it at middle; a series of slight silvery striæ just before termen. Hind wing brown with a cupreous gloss; cilia white at tips; the underside whitish suffused with brown, the terminal area broadly fuscous brown.

Hab. Uganda, Mabira Forest, Chagwe (*Neave*), 1 ♀, Mbale, Mt. Kokanjero (*Neave*), 1 ♀; Natal, Durban (*E. L. Clark*), 2 ♂ type. *Exp.* 36 millim.

8281. **Phytometra æneofusa.** (Plate CCXXXVII. fig. 3.)

Plusia æneofusa, Hmpsn. Moths Ind. ii. p. 576 (1894); Swinh. A. M. N. H. (6) xv. p. 11 (1895).

♂. Head and tegulæ ochreous tinged with scarlet, the latter with dark medial line and the tips blackish and white; thorax grey-brown, with the patagia at base and dorsal crest in front ochreous tinged with scarlet; palpi, pectus, and legs grey-brown; abdomen grey-brown, the genital tufts white. Fore wing brown suffused with grey, the inner medial area and the terminal area except at apex and a patch above tornus brilliant metallic gold, a patch below base of cell, the cell on medial area and patches beyond it and below its extremity red-brown mixed with gold, subbasal line slight, brown, from costa to vein 1; antemedial line brown slightly defined on inner side by gold, oblique and almost straight; orbicular, reniform, and a **U**-shaped stigma below the cell with very faint brown outlines; an oblique brown line from lower angle of cell to inner margin; postmedial line brown slightly defined on inner side by gold, oblique, straight to submedian fold then slightly excurved, some whitish points beyond it on costa; subterminal line brown defined on inner side by red-brown and golden suffusion, angled outwards at vein 7 and below veins 4 and 3 and excurved to tornus; a fine white line at base of cilia. Hind wing brown with a cupreous gloss; cilia white with a brown line through them; the underside whitish thickly irrorated with brown, a brown discoidal striga, the postmedial area broadly brown.

Hab. Sikhim (*Lidderdale, Möller*), 4 ♂ type; Assam, Khásis. *Exp.* 36 millim.

b^1. Hind tibiæ of male moderately fringed with hair above, the anal tuft normal.
  a^2. Fore wing with the termen excised below apex and excurved at middle.
    a^3. Fore wing with the golden brown shading on inner medial and subterminal areas dark, the subterminal line strongly incurved below vein 6 ..... *fracta.*
    b^3. Fore wing with the golden shading on inner medial and subterminal areas paler, the subterminal line obliquely incurved below vein 6 ... *placida.*

8282. **Phytometra fracta.** (Plate CCXXXVII. fig. 4.)

Plusia fracta, Wlk. xii. 920 (1857).

Head and thorax grey mixed with pale brown, the tegulæ except at base and the dorsal crest in front with a slight reddish tinge, the former whitish at tips; patagia with an oblique whitish line at middle; abdomen whitish tinged with brown, the basal crest rufous in front. Fore wing whitish tinged with red-brown and with a slight golden gloss especially on terminal area, the inner medial area golden-brown beyond the antemedial line and below the stigma; subbasal line fine, white, from costa to vein 1; ante-

medial line whitish, excurved below costa and incurved in cell, then silvery-white and oblique, a golden-brown mark before it at inner margin; orbicular with brownish centre and whitish annulus, round; a **U**-shaped stigma below the cell slightly defined by whitish; reniform with brownish centre and whitish annulus, elliptical; an oblique brownish line from lower angle of cell to inner margin; postmedial line brown filled in with ochreous white, excurved below costa, then oblique, very slightly waved to discal fold, a whiter shade beyond it and some white points on costa; subterminal line brown, rather diffused, excurved below costa and strongly incurved below vein 6, then erect and defined on outer side by whitish towards inner margin; a white line just before termen from apex to vein 3; cilia with a fine whitish line at base and small dark spot at vein 4. Hind wing cupreous brown, the interspaces of basal half whitish; cilia white with a brown line through them; the underside with the basal half brownish white, the terminal half pale brown, the costal and terminal areas irrorated with dark brown.

Hab. Congo (*Curror*), 1 ♀ type; Abyssinia, Atbara (*Gerrard*), 1 ♂; Br. E. Africa, Ndimu (*Betton*), 1 ♀; Uganda, Entebbe (*Minchin*), 1 ♂, Ruwenzori (*Wollaston*), 1 ♀; Mashonaland, Salisbury (*Marshall*), 1 ♂; Natal, Durban (*Leigh*), 2 ♀. *Exp.* 36–40 millim.

8283. **Phytometra placida.**

Plusia placida, Moore, Lep. Ceyl. iii. p. 73, pl. 151. f. 10 (1884); Hmpsn. Moths Ind. ii. p. 574.
Plusia chillagoes, Lucas, Pr. Roy. Soc. Queensl. xv. p. 150 (1900).

Head and thorax whitish tinged with pale red-brown, the tegulæ

Fig. 120.—*Phytometra placida*, ♂. ½.

pale rufous with white tips; antennæ white slightly tinged with brown; abdomen whitish tinged with red-brown, the basal crest

fiery red in front. Fore wing whitish suffused with pale red-brown, the medial area below the stigma and the terminal area with a metallic golden gloss; subbasal line fine, white, from costa to submedian fold; antemedial line whitish, incurved in cell, then oblique; orbicular with brownish centre and whitish annulus, round; a broad U-shaped stigma below the cell, slightly defined by whitish; reniform with brownish centre and slight whitish annulus, elliptical; postmedial line double, brownish filled-in with white, bent outwards below costa, then oblique, a whiter shade beyond it; subterminal line diffused, brown, excurved at vein 7, and obliquely incurved below vein 8; a white line before termen from apex to vein 3; a fine white line at base of cilia. Hind wing reddish brown, the interspaces of basal half whitish; cilia white with a brown line through them; the underside with the basal half brownish white, the terminal half suffused with brown, a brown discoidal striga, diffused postmedial line, and subterminal shade.

Hab. Punjab, Deyra Dhun, 1 ♂; Madras, Nilgiris (*Hampson*), 1 ♀; Ceylon, 1 ♂ type; Queensland, type † *chillagoes* in Coll. Lucas. *Exp.* 36 millim.

b^2. Fore wing with the termen evenly curved.
  a^3. Fore wing with the postmedial and terminal areas not metallic gold.
    a^4. Fore wing with the stigma below the cell Y-shaped, or U-shaped with a spot beyond its lower extremity.
      a^5. Fore wing with the inner medial area suffused with golden cupreous.
        a^6. Fore wing with the tail of the Y-shaped stigma forming a large triangular lobe ..... *gammaloba.*
        b^6. Fore wing with the tail of the Y-shaped stigma not forming a large triangular lobe.
          a^7. Fore wing with silver spot filled in with cupreous in lower part of cell above the stigma ..... *cupreomicans.*
          b^7. Fore wing with slight silver mark in lower part of cell above the stigma.
            a^8. Fore wing with the inner and terminal areas chocolate-brown suffused with golden cupreous .. *chalcedona.*
            b^8. Fore wing with the inner and terminal areas bright red-brown suffused with golden cupreous... *circumscripta.*
          c^7. Fore wing without silver mark in cell above the stigma.
            a^8. Fore wing with the stigma U-shaped with a spot beyond its lower extremity ..... *verruca.*
            b^8. Fore wing with the stigma Y-shaped.
              a^9. Fore wing without black-brown patch on medial area below the cell..... *hemichalcea.*

b^9. Fore wing with black-brown patch on medial area below the cell ..... *dorfmeisteri.*

b^5. Fore wing with the inner medial area not suffused with golden cupreous.

a^8. Fore wing with short black streaks before the subterminal line between veins 8 and 4.

a^7. Head, thorax, and fore wing grey mixed with dark brown ..... *brassicæ.*

b^7. Head, thorax, and fore wing whitish mixed with red-brown ..... *ni.*

b^6. Fore wing without short black streaks before the subterminal line between veins 8 and 4.

a^7. Fore wing with rufous patch below middle of cell ..... *subsidens.*

b^7. Fore wing without rufous patch below middle of cell.

a^8. Fore wing with the termen pale with fine silvery line and short streaks before it ..... *angulum.*

b^8. Fore wing with the termen not pale with fine silvery line and short streaks before it.

a^9. Fore wing with flesh-coloured spot before middle of termen. *limbirena.*

b^9. Fore wing without flesh-coloured spot before middle of termen.

a^{10}. Fore wing with the stigma below the cell widely spreading above..... *tarassota.*

b^{10}. Fore wing with the stigma below the cell narrow above ..... *furcifera.*

b^4. Fore wing with the stigma below the cell **U**-shaped without spot beyond it ..... *eugrapha.*

c^4. Fore wing with the stigma below the cell **V**-shaped, its lower part bent outwards.

a^5. Fore wing with the ground-colour golden-yellow ..... *ablusa.*

b^5. Fore wing with the ground-colour not golden-yellow.

a^6. Fore wing with fine waved silvery line before termen.

a^7. Fore wing with the stigma below the cell elongate ..... *lunata.*

b^7. Fore wing with the stigma below the cell short.

a^8. Fore wing without silvery-white spot in lower extremity of the stigma..... *violascens.*

b^8. Fore wing with silvery-white spot in lower extremity of the stigma..... *microstigma.*

b^6. Fore wing without fine waved silvery line before termen.

a^7. Fore wing with the markings silvery-white.

a^8. Fore with without black-brown patch on medial area below the cell ..... *daubei.*
b^8. Fore wing with black-brown patch on medial area below the cell ..... *indicator.*
b^7. Fore wing with the markings not silvery-white ..... *obtusisigna.*
d^4. Fore wing with the stigma below the cell very elongate and oblique V-shaped with its lower part not bent outwards ..... *lectula.*
c^4. Fore wing with the stigma below the cell formed by two obliquely-placed elongate elliptical silvery spots ..... *distalagma.*
b^3. Fore wing with the postmedial and terminal areas metallic gold.
a^4. Fore wing with the golden area emitting an oblique spur to the cell below the orbicular ..... *brachychalcea.*
b^4. Fore wing with the golden area not emitting an oblique spur to the cell below the orbicular ..... *bipartita.*

8284. **Phytometra gammaloba.** (Plate CCXXXVII. fig. 5.)

Plusia gammaloba, Hmpsn. A. M. N. H. (8) v. p. 430 (1910).

♂. Head and thorax bright rufous mixed with grey; tegulæ with slight dark medial line and white tips; abdomen pale rufous, the basal crest fiery red tipped with grey, the crest on 2nd segment brown tipped with grey. Fore wing bright golden cupreous with slight dark irroration; subbasal line represented by a silvery striga from costa and double striga from cell; antemedial line silvery defined by cupreous brown, excurved below costa, angled inwards in cell, oblique and sinuous from cell to inner margin; the stigma formed by a small black spot defined at sides by silvery striæ above median nervure and a Y-shaped silvery mark below the cell filled in with whitish, its tail bent outwards and dilated into a triangular lobe filled in with silvery-white; reniform represented by a silvery striga on upper discocellular with elliptical cupreous brown mark beyond it and two silvery striæ below forming with the median nervure an incomplete triangle; postmedial line indistinctly double filled in with silvery-grey, obliquely curved and minutely waved from costa to submedian fold where it is angled inwards, then bent outwards, some grey-white suffusion before and beyond it from costa to vein 3, narrowing below; subterminal line silvery-white, excurved from costa to vein 6, then oblique, some grey-white beyond it at middle and in submedian interspace; a fine silvery-white line just before termen; cilia grey-white mixed with cupreous brown. Hind wing cupreous brown, the cilia with fine whitish line at base and white tips; the underside whitish suffused and irrorated with red-brown, an indistinct oblique postmedial line, the area beyond it dark brown with a cupreous gloss.

♀. Abdomen greyer; hind wing darker.

Hab. Madagascar, Betsileo (*Cowan*), 1 ♂, 1 ♀ type. *Exp.*, ♂ 44, ♀ 40 millim.

8285. Phytometra cupreomicans.

Plusia cupreomicans, Hmpsn. Trans. Zool. Soc. xix. p. 112, pl. iv. f. 19 (1909).

Head and thorax whitish suffused with red-brown; abdomen white tinged with red-brown, the crests darker at tips. Fore wing red-brown almost entirely suffused with brilliant cupreous gold; subbasal line double, brown filled in with gold, from costa to vein 1; antemedial line double, brown filled in with gold, waved; an oblique elliptical silvery stigma in and below middle of cell with a small round spot beyond its lower extremity, both defined by brown and with some gold in centres; reniform slightly defined by brown and with silvery points at lower extremities; postmedial line double, brown filled in with gold, slightly excurved below costa and incurved at discal fold, excurved at middle, then oblique and slightly excurved above inner margin; subterminal line brown, excurved below vein 7 and at middle; cilia with fine whitish line at base and whitish tips. Hind wing whitish suffused with cupreous red-brown, especially on terminal half; cilia with fine whitish line at base and white tips; the underside white tinged with rufous, the terminal half suffused with brown, a slight curved brown postmedial line.

Hab. S. Nigeria, Old Calabar (*Crompton*), 1 ♀; Uganda, Ruwenzori, Semliki Valley (*Wollaston*), 1 ♀ type; N. Rhodesia, Luangwa R. (*Neave*), 1 ♂. *Exp.* 32–36 millim.

8286. Phytometra chalcedona. (Plate CCXXXVII. fig. 6.)

Plusia chalcedona, Hmpsn. Ann. S. Afr. Mus. ii. p. 346 (1902).

Head and thorax red-brown mixed with some grey, the tegulæ fiery red at middle, the patagia tipped with grey; tarsi ringed with whitish; abdomen pale red-brown, the crests at tips and ventral surface deeper red-brown. Fore wing purple-grey suffused with red-brown and almost entirely glossed with gold; subbasal line slight, silvery-white, from costa to submedian fold, a red-brown and golden patch beyond it below the cell; antemedial line silvery, obsolescent, angled outwards below costa and inwards in cell, then oblique and slightly sinuous; a silvery stigma below the cell consisting of a small oblique **U**-shaped mark with minute crescent above it in the cell and elliptical spot beyond its lower extremity; postmedial line brown, slightly defined on outer side by silvery-white from costa to vein 3, oblique, straight; subterminal line indistinct, brown, almost straight; a slight silvery-white line before middle of termen; cilia grey at base, brown at tips. Hind wing whitish suffused with cupreous brown, the terminal area cupreous brown; cilia white at base, brown at tips; the underside

whitish irrorated with brown, a slight discoidal striga, sinuous postmedial line, and faint subterminal shade.

Hab. Uganda, Ruwenzori (*Wollaston*), 1 ♀; Transvaal, Pretoria (*Distant*), 1 ♂; Natal, Estcourt (*Hutchinson*), 1 ♂, 1 ♀ type, Durban (*Clark*), 1 ♂. *Exp.* 30–34 millim.

8287. **Phytometra circumscripta.**

Plusia circumscripta, Frr. Neue Beitr. i. p. 42, pl. 23. f. 2 (1831); Geyer, Eur. Schmett., Noct. f. 855; Dup. Lép. Fr. Suppl. iii. p. 489, pl. 42. f. 2; Staud. Cat. Lep. pal. p. 237.

♂. Head and thorax red-brown mixed with purple-grey, the tegulæ fiery red at base; abdomen grey-brown suffused with rufous, the crests dark brown and grey at tips. Fore wing purple-grey suffused and irrorated with red-brown, the inner half of medial area and the terminal area except at apex and tornus bright rufous with a golden gloss; subbasal line slight, silvery-whitish, from costa to submedian fold, a rufous and gold patch beyond it below the cell; a silvery stigma below the cell consisting of a very narrow oblique U-shaped mark with streak from it to antemedial line on median nervure and elliptical spot beyond its lower extremity; postmedial line brown defined on outer side by silvery-whitish and with a silver line before it from vein 3 to inner margin, oblique, excurved above inner margin, some whitish points beyond it on costa; subterminal line indistinct, brownish, oblique to vein 5 and slightly excurved at middle, some silvery-white on it below vein 2; a silvery-white terminal line from just below apex to vein 2. Hind wing whitish suffused with cupreous brown, the terminal area cupreous brown, a slight brown postmedial line; cilia whitish with a brown line near base; the underside whitish tinged and irrorated with red-brown, a rather diffused brown postmedial line and faint subterminal shade.

Hab. Sicily, 2 ♂; Greece, 1 ♂; Crete; Syria. *Exp.* 30–36 millim.

8288. **Phytometra verruca.** (Plate CCXXXVII. fig. 7.)

Noctua oo, Cram. Pap. Exot. iv. p. 45, pl. 311. f. F (1782), nec f. E.
Noctua verruca, Fabr. Ent. Syst. iii. 2, p. 81 (1794); Ottolengui, J. N.Y. Ent. Soc. x. pl. viii. f. 2; Smith, Cat. Noct. N. Am. p. 250.
Argyrogramma omega, Hübn. Zütr. ii. p. 29, ff. 373–4 (1823).
Autographa omicron, Hübn. Verz. p. 251 (1827),
Plusia quæstionis, Treit. Schmett. Eur. x. 2. p. 132 (1835), nec Fabr.
Plusia rutila, Wlk. xxxiii. 837 (1865).

Head yellow suffused with fiery red, the antennæ brownish; thorax deep brown, some of the scales tipped with grey; pectus and hind legs brownish white; abdomen whitish tinged with brown, the crests deep brown. Fore wing greyish suffused and irrorated with deep brown and almost entirely glossed with brilliant

gold, the medial area below submedian fold brilliant gold; a slight chocolate-brown subbasal line from costa to submedian fold; antemedial line chocolate-brown, indistinctly double, inwardly oblique below the cell; an oblique elliptical golden spot with silvery annulus below middle of cell, with a minute silvery spot well beyond its lower extremity; reniform faintly defined by chocolate-brown, oblique; a faint oblique sinuous brown line from lower angle of cell to inner margin; postmedial line chocolate-brown, indistinctly double, excurved below costa, then oblique and slightly sinuous, angled inwards in submedian fold, then excurved; subterminal line chocolate-brown, rather diffused, angled outwards at vein 7 and inwards at discal fold, angled outwards below veins 4, 3 and ending at tornus; a slight chocolate-brown line before termen except towards tornus; cilia dark brown. Hind wing whitish suffused with cupreous brown; a fine dark terminal line; cilia whitish; the underside white faintly tinged with brown, a faint brown subterminal shade.

Hab. U.S.A., Eastern States, 3 ♂, 1 ♀, Massachusetts, New York, New Jersey, Florida, Kansas, Texas; Mexico, Jalapa (*Trujillo*), 1 ♂, 1 ♀, Tabasco, Teapa (*H. H. Smith*), 1 ♀, Ventanas (*Forrer*), 1 ♀; Costa Rica, Candelaria Mts. (*Underwood*), 1 ♀; Panama, San Felix (*Champion*), 1 ♀, Godman-Salvin Coll., Cana mines (*Tylecote*), 1 ♀; Jamaica (*Elmsley*), 1 ♀ type *rutila*, Runaway Bay (*Walsingham*), 1 ♂; Cuba, Matanzas (*Schaus*), 1 ♂; Dominica (*Eliott*), 1 ♀; St. Vincent (*H. H. Smith*), 2 ♀; Colombia, Bogotá (*Stevens*), 1 ♀; Venezuela (*Dyson*), 1 ♀; Br. Guiana (*Rodway*), 1 ♂. *Exp.* 30–34 millim.

8289. **Phytometra hemichalcea**, n. sp.
(Plate CCXXXVII. fig. 8.)

♀. Head and thorax red-brown mixed with some whitish; abdomen whitish suffused with red-brown. Fore wing red-brown mixed with greyish and almost entirely suffused with cupreous gold; subbasal line silvery defined on outer side by brown, excurved below costa and ending at submedian fold; antemedial line silvery slightly defined on each side by brown, incurved in cell, then oblique and sinuous; orbicular narrow, oblique, defined by whitish; an oblique silvery **Y**-shaped stigma below middle of cell, filled in with gold and its tail formed by a small spot; reniform very faintly defined by brown; traces of a medial brown line from the stigma to inner margin; postmedial line double, brown filled in with gold, excurved below costa and at middle, some whitish points beyond it on costa; subterminal line indistinct, diffused, brown, angled outwards at vein 7 and below veins 4 and 3, ending at tornus; a white line just before termen except at apex. Hind wing cupreous brown; cilia white tinged with brown; the underside white irrorated with brown, a slight

brown discoidal striga, indistinct oblique postmedial line, and faint subterminal shade.

Hab. N. Nigeria, Ilesha (*Humfrey*), 1 ♀ type. *Exp.* 28 millim.

8290. **Phytometra dorfmeisteri.** (Plate CCXXXVII. fig. 9.)

Plusia dorfmeisteri, Feld. Reis. Nov. pl. 110. f. 33 (1874).
Plusia siculifera, Holl. Psyche, vii. p. 8 (1894).
Plusia rhodochrysa, de Joan. Ann. Soc. Ent. Fr. 1903, p. 171, pl. 9. f. 3.

♀. Head and thorax deep red-brown mixed with some yellowish and white, the tegulæ and patagia with whitish tips and the latter with oblique whitish line across them; pectus and legs yellowish mixed with red-brown, the tarsi with pale rings; abdomen yellowish suffused with brown. Fore wing yellowish suffused and irrorated with red-brown and glossed with brilliant metallic gold especially on inner medial area, which has a black-brown patch below the cell; subbasal line represented by silver striæ from costa and cell defined on outer side by black; antemedial line silvery defined on outer side by black-brown, angled outwards below costa and inwards in cell, then oblique and slightly sinuous; orbicular with yellowish outline and its centre defined by black, oblique; an oblique silver Y-shaped stigma below the cell, its arms with yellow between them and its tail slightly dilated; reniform chocolate-brown defined by black; two small black spots at middle of costa; postmedial line double, red-brown filled in with gold, slightly bent outwards below costa, then waved, oblique below vein 3, and angled inwards at submedian fold, some white points beyond it on costa; subterminal line blackish with black-brown shades before it from costa to vein 4 and beyond it at middle, slightly excurved below vein 7 and waved towards inner margin; a terminal series of small black lunules forming a bar at middle, defined on inner side by whitish; cilia whitish with an interrupted red-brown line through them. Hind wing dark brown with a cupreous gloss; cilia whitish with a brown line near base; the underside with the basal half whitish suffused with red-brown, the terminal half fuscous, a slight brown discoidal striga.

Hab. S. Nigeria, Ilesha (*Humfrey*), 1 ♀; Gaboon, Ogové R., type † *siculifera* in Coll. Holland; Natal, Durban (*Leigh, Cooke*), 2 ♀; Cape Colony, Knysna, type † ♀ in Coll. Rothschild; Mauritius. *Exp.* 30 millim.

8291. **Phytometra brassicæ.** (Plate CCXXXVII. fig. 10.)

Plusia brassicæ, Riley, 2nd Rept. Ins. Mo. p. 110, f. 81 (1870); Beth. Rept. Ent. Soc. Ont. 1871, p. 51, f. 93; Pack. Hayden's 9th Rept. Geol. Surv. p. 752, ff. *a–c*; Ottolengui, J. N.Y. Ent. Soc. x. pl. ix. f. 11; Druce, Biol. Centr.-Am., Het. ii. p. 503; Smith, Cat. Noct. N. Am. p. 253.
Plusia echinocystis, Behr, Streck. Lep. p. 94 (1874).

Head and thorax brown mixed with grey; tegulæ at middle and

tips and patagia at tips with black lines defined behind by white scales; the spurs and tarsi banded black and white; abdomen grey tinged with red-brown, some whitish hair at base, the crests dark brown and whitish at tips, the lateral tufts of male rufous. Fore wing brown mixed with grey and irrorated with black, tinged in parts with rufous; subbasal line indistinctly double, brown filled in with whitish, slightly angled outwards below costa and cell and ending at submedian fold; antemedial line indistinctly double, brown filled in by whitish, waved; orbicular defined by white, narrow, oblique, somewhat constricted at middle; an oblique silvery-white Y-shaped stigma below the cell, its tail dilated into an elliptical spot; reniform very indistinct and defined by a few white scales, constricted at middle; postmedial line dark brown slightly defined on outer side by whitish, bent outwards below costa, then oblique and minutely waved, somewhat bent outwards below submedian fold, some whitish points beyond it on costa; subterminal line blackish slightly defined on outer side by white and with short black streaks before it from below costa to above vein 4, dentate; a fine waved blackish terminal line; cilia with red-brown line near base and intersected with red-brown at the veins. Hind wing red-brown with a cupreous gloss, the interspaces of basal half with some whitish; cilia white with a maculate brown line near base; the underside white thickly irrorated with brown, a slight brown discoidal striga and indistinct diffused curved postmedial line.

Ab. 1. Fore wing with the stigma consisting of a U-shaped mark with spot beyond its lower extremity.

Hab. Canada, Ottawa (*Fletcher*), 2 ♂; U.S.A., throughout, New York (*Speyer*), 1 ♂, 2 ♀, Missouri (*Riley*), 3 ♂, Alabama, 1 ♀, Colorado, Boulder (*Cockerell*), 1 ♂, 4 ♀, Denver (*Oslar*), 1 ♂, 3 ♀, California (*Behr*, *D'Urban*), 3 ♂, 2 ♀, Marina Co., 1 ♂, Arizona, Phœnix (*Kunzé*), 7 ♂, 5 ♀, Prescott (*Kunzé*), 1 ♂, 1 ♀; Mexico, Jalapa (*Trujillo*), 1 ♂, 2 ♀, Godman-Salvin Coll. *Exp.* 34–42 millim.

Larva. Riley, Rept. U S. Dept. Agric. 1883, p. 119, pls i. & xi.

Green with whitish dorsal, subdorsal, and lateral lines, sometimes wanting; 1st two pairs of prolegs absent. Food-plants: Cabbage, Turnip, Tomato, *Reseda*, *Taraxicum*, *Rumex*, *Crepis*, *Chenopodium*, *Trifolium*, *Senecio*. Extremely destructive.

8292. **Phytometra ni.**

Noctua ni, Hübn. Eur. Schmett., Noct. f. 284 (1802); Dup. Lép. Fr. vii. 2. p. 44, pl. 137. f. 1; Frr. Neue Beitr. pl. 23. f. 1; Knaggs, Ent. Ann. 1869, p. 124 & 1870, f. 3; Mill. Icones, iii. p. 394, pl. 149. ff. 11–13; Meyr. Brit. Lep. p. 159; Barrett, Lep. Brit. vi. p. 128, pl. 243. f. 2 Hmpsn. Moths Ind. ii. p. 570; Staud. Cat. Lep. pal. p. 239.

Plusia humilis, Wlk. xii. 915 (1857).

Plusia extrahens, Wlk. xii. 929 (1857).

Plusia significans, Wlk. xii. 930 (1857).

Plusia innata, Herr.-Schäff. Corresp.-blatt. zool.-min. Ver. Regensb. xxii p. 184 (1868).
Plusia comma, Schultz, Intern. Ent. Zeit. i. p. 32 (1907).
Plusia ni, deserticola, Oberth. ined. Roths. ? Nov. Zool. xx. p. 129 (1913).

Head and thorax rufous mixed with whitish, the tegulæ with slight blackish line at middle defined behind by white scales; abdomen pale rufous, the crests red-brown and whitish, the ventral surface white tinged with rufous. Fore wing whitish irrorated and striated with black-brown and suffused with red-brown with a golden cupreous gloss; subbasal line white defined on each side by red-brown and with a black striga before it below the cell, sinuous, from costa to submedian fold; antemedial line double, red-brown filled in with white, waved, oblique below the cell; orbicular white, its centre defined by red-brown, oblique elliptical; an oblique silvery-white V-shaped stigma below the cell, with spot beyond its lower extremity with some red-brown in centre, its arms filled in with white; postmedial line double, red-brown filled in with white, bent outwards below costa, then oblique and minutely

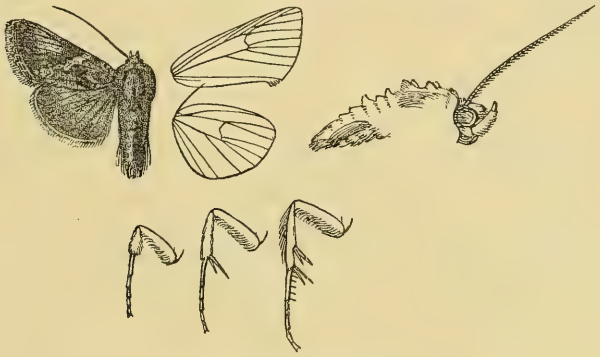


Fig. 121.—*Phytometra ni*, ♂. ½.

waved, bent outwards below submedian fold, some white points beyond it on costa; subterminal line blackish slightly defined on outer side by white and with short black streaks before it from below costa to above vein 4, dentate; a fine white line before termen and a fine dark terminal line; cilia with a white line at base followed by a series of red-brown lunules. Hind wing whitish suffused with cupreous red-brown, the terminal area cupreous red-brown; cilia white with a red-brown line near base; the underside white tinged with rufous, the costal area irrorated with brown and the terminal area slightly suffused with brown.

Ab. 1. *comma*. Fore wing with the stigma forming a Y-mark.

Ab. 2. *deserticola*. Fore wing slightly paler and less rufous.

Hab. Jamaica, Kingston (*Cockerell*), 1 ♀; Cuba; Haiti

(*Tweedie*), 1 ♀ type *humilis*; CAPE VERDE Is., St. Vincent (*J. J. Walker*), 3 ♂, 2 ♀; BRITAIN; FRANCE, Sand Coll.; GERMANY Zeller Coll.; AUSTRIA; HUNGARY; SWITZERLAND; SPAIN, Barcelona, Frey Coll., Andalusia, Leech Coll.; ITALY, Naples, Zeller Coll., Capri (*C. S. Browne*); ALGERIA; CANARIES, Teneriffe, Guimar (*Walsingham*), 1 ♀; ? LAPLAND, Leech Coll.; ARMENIA; ASIA MINOR (*Lederer*), 1 ♀, Pontus, Amanus Mts., Eybiz, 1 ♀; CYPRUS (*Glaszner*), 1 ♂, Nicosia (*Bucknill*), 2 ♀; SYRIA; EGYPT, Dabod (*Wood-Jones*), 1 ♂; BR. E. AFRICA, Eb Urru (*Betton*), 1 ♂; TRANSVAAL, Pretoria (*Distant*), 1 ♂; BASUTOLAND, Caledon R. (*Crawshay*), 1 ♀; CAPE COLONY, Cape Town (*Lightfoot*), 1 ♂; ADEN (*Yerbury*), 1 ♂; PERSIAN GULF, Fao (*Cumming*), 1 ♀, Mekran Coast, Ormara (*Cumming*), 1 ♀; W. TURKESTAN; JAPAN, Yokohama (*Jonas*, *Pryer*), 1 ♂, 2 ♀; C. CHINA, Chekiang (*Pryer*), 1 ♀; PUNJAB, Dharmsála (*Hocking*), 1 ♂, Cambellpur (*Yerbury*), 1 ♀, Wuzeerabad (*Hearsey*), 1 ♂, 1 ♀ types *extrahens* and *significans*; BENGAL, Pusa (*Lefroy*), 1 ♀; BOMBAY, Kutch, 1 ♂, Mhow (*Forsayeth*), 1 ♂; MADRAS, Bangalore (*Watson*), 1 ♂, 1 ♀. *Exp.* 30–38 millim.

Larva. Kirby, Butt. & Moths Eur. p. 271; Hffm. Raup. p. 135.

Yellowish green with white lateral line. Food-plants: Nettle, *Solanum*, etc.

8293. **Phytometra subsidens.** (Plate CCXXXVII. fig. 11.)

Plusia subsidens, Wlk. xv. 1787 (1858).

♀. Head and thorax rufous, the tegulæ and patagia whitish at tips, the scales of metathoracic crest whitish at tips; pectus and legs ochreous and rufous, the tarsi slightly ringed with white; abdomen ochreous suffused with rufous, the crests darker. Fore wing rufous suffused with golden cupreous, the medial area with a deep rufous patch below the cell; subbasal line silvery defined on each side by deep rufous, from costa to vein 1, a rufous patch beyond it below the cell with a slight silver streak in submedian fold; antemedial line silver, angled outwards below costa, incurved in cell, inwardly oblique below the cell; an oblique silver **U**-shaped stigma below the cell with a spot beyond its lower extremity; reniform very faintly defined by brown and somewhat constricted at middle; postmedial line indistinctly double, red-brown, filled in with silver at inner margin, bent outwards below costa, then oblique, slightly excurved at middle and excurved below submedian fold, some whitish points beyond it on costa; subterminal line indistinct, red-brown, excurved below vein 7, angled inwards at discal fold, excurved below veins 4 and 3 and submedian fold, a deep rufous shade beyond it from apex to vein 3; a whitish line before termen from apex to vein 2; a fine dark terminal line. Hind wing ochreous suffused with cupreous red-brown, the terminal area

darker; cilia white with a red-brown line near base; the underside white tinged with rufous, a diffused brown postmedial line, the area beyond it suffused with greyish brown.

Ab. 1. Fore wing with the stigma below the cell forming a **Y**-mark.

Hab. N. S. Wales, Sydney (*Lambert*), 2 ♀ type; S. Australia, Parkside (*Lower*), 1 ♀. *Exp.* 36 millim.

8294. **Phytometra angulum.** (Plate CCXXXVII. fig. 12.)

Plusia angulum, Guen. Noct. ii. p. 350 (1852).

Head and thorax bright rufous, the tegulæ with slight brown line at middle and white tips, and some of the scales of thorax tipped with white; tarsi brown ringed with white; abdomen ochreous suffused with rufous, the crests rufous with some white at tips. Fore wing purple-brown irrorated with white and suffused with golden cupreous especially on terminal area except towards tornus, the medial area with a deeper rufous patch below the cell; subbasal line represented by two slight oblique white striæ from costa; antemedial line slight, whitish, oblique to middle of cell, then waved; orbicular defined by whitish except above and with some whitish in centre, oblique elliptical; an oblique brilliant silver **Y**-shaped stigma below the cell, its arms with some white between them, its tail short and dilated at extremity; reniform deep rufous with slight whitish outline very strongly constricted at middle; postmedial line rufous, bent outwards below costa, then waved to vein 5, oblique to submedian fold where it is angled inwards, then bent outwards, some white points beyond it on costa; subterminal line indistinct, brownish, slightly excurved below vein 7, angled inwards at discal fold, excurved below veins 4 and 3 and above vein 1; a fine silvery-white line before termen with slight streaks before it in the interspaces from below apex to vein 2; the termen and cilia grey mixed with purple-brown. Hind wing ochreous tinged with cupreous brown, the terminal area darker; cilia ochreous white with a brown line near base; the underside ochreous white tinged with brown, the terminal area suffused with brown.

Hab. Transvaal, Pretoria (*Distant*), 1 ♂, Johannesburg (*Ross*), 1 ♂; Natal, Fort Nottingham (*Hornby*), 1 ♀, Maritsburg (*Berensburg*), 1 ♀, Estcourt (*Hutchinson*), 1 ♂, 3 ♀, Durban (*Marshall, Leigh*), 1 ♂, 1 ♀; Basutoland, Maseru (*Crawshay*), 1 ♂; Cape Colony (*Drege, Trimen*), 1 ♂, 1 ♀, Transkei (*Miss F. Barrett*), 3 ♂, 1 ♀. *Exp.* 38–42 millim.

Larva. Pale green; dorsal line double, fine, white; subdorsal line formed by obscure sinuous whitish striæ; a stronger white lateral line; warts with one hair; two anterior pairs of prolegs absent.

8295. Phytometra limbirena.

Plusia gamma, Koll. Hügel's Kaschmir, iv. p. 481 (nec Linn.).
Plusia limbirena, Guen. Noct. ii. p. 350 (1852); Moore, Lep. Ceyl. iii. p. 72, pl. 152. f. 5; Hmpsn. Moths Ind. ii. p. 568.

Head and thorax dark chocolate-brown mixed with grey-white; tegulæ with black line at middle and whitish tips; tarsi dark brown ringed with white; abdomen pale brown with some white hair at base of sides, the crests dark brown, the lateral tufts of male rufous, the ventral surface brown mixed with grey. Fore wing purplish grey suffused in parts with deep chocolate-brown and irrorated with black, the medial area with a deep chocolate-brown patch below the cell; subbasal line slight, pale, sinuous, from costa to submedian fold; antemedial line double, chocolate-brown filled in with silvery-white, waved, incurved in cell and oblique below the cell; orbicular with faint pale outline and its centre defined by blackish, narrow, oblique, constricted at middle; an oblique brilliant silver U-shaped stigma below the cell, its lower extremity somewhat bent inwards and with an elliptical spot beyond it; reniform very faintly defined by black-brown; postmedial line double, chocolate-brown, filled in with silver at inner margin, bent outwards below costa, then oblique and minutely waved, angled inwards at submedian fold and bent outwards below it, some whitish points beyond it on costa; subterminal line very indistinct, dark, with some silvery points on its outer side, chocolate-brown shades before it from costa to vein 4 and below vein 2, and beyond it at middle, the line excurved below vein 7, then incurved; a fine waved black terminal line with minute striæ before it on apical half, and a flesh-coloured spot defined on inner side by black at middle. Hind wing white, the inner area suffused with cupreous brown, the veins and terminal area dark cupreous brown; cilia white with a cupreous brown line through them; the underside white irrorated with brown especially on costal area, the terminal area suffused with brown, a slight discoidal striga and diffused postmedial line.

Ab. 1. Fore wing with the stigma in the form of a Y-mark.

Hind tibiæ with the comb formed by two spines only.

Hab. St. Helena (*Wollaston*), 2 ♂, 3 ♀; Br. E. Africa, Eb Urru (*Betton*), 1 ♂, 1 ♀, Lagari (*Betton*), 1 ♀, Machakos (*Crawshay*), 1 ♂, 1 ♀; Uganda, Entebbe (*Wollaston*), 1 ♀, Ruwenzori (*Wollaston*), 1 ♀; Germ. E. Africa, Utangu Distr. (*Neave*), 1 ♂; Mashonaland, Salisbury (*Marshall*), 2 ♂, 1 ♀; Lorenço Marques (*Junod*), 1 ♂, 1 ♀; Transvaal, White R. (*Cooke*), 1 ♀, Pretoria (*Distant*), 1 ♀; Natal, Estcourt (*Hutchinson*), 1 ♀, Durban (*Clark*), 1 ♂; Cape Colony (*Sir A. Smith*), 1 ♂, 1 ♀; Madagascar, Betsileo (*Cowan*), 1 ♀; Mauritius, Curepipe (*Tulloch*), 1 ♀; Aden (*Yerbury*), 1 ♂; Madras, Nilgiris (*Hampson*), 4 ♂; Ceylon (*Green*), 1 ♀, Kandy (*Meade-Waldo*), 1 ♀, Udagama (*Mackwood*), 1 ♂. *Exp.* 32–42 millim.

8296. **Phytometra tarassota**, n. n. (Plate CCXXXVII. fig. 13.)

Plusia confusa, Moore, Lep. Atk. p. 149 (1882), nec Stephens, 1850; Hmpsn. Moths Ind. ii. p. 568.

Head and thorax brown mixed with ochreous and a few black scales; antennæ blackish; tegulæ tipped with white; tibiæ and tarsi ringed with whitish, the spurs black and white; abdomen brownish ochreous, the crests browner. Fore wing ochreous irrorated and suffused with brown with a golden gloss, especially on inner half of medial area and before the subterminal line; subbasal line white, excurved below costa and ending at vein 1, a black striga before it below the cell; antemedial line whitish defined on each side by brown, angled outwards below costa, incurved in cell, oblique and sinuous below the cell, two slight black marks before it on inner margin; orbicular with whitish annulus, narrow, oblique; an oblique silvery **U**-shaped stigma below the cell, with a spot beyond its lower extremity; reniform very obscurely defined with four black points in its angles; postmedial line double, brown filled in with whitish, bent outwards below costa, then minutely waved, somewhat incurved at discal fold and angled inwards below submedian fold, some whitish points beyond it on costa; subterminal line whitish defined on inner side by golden-brown suffusion, angled outwards at veins 7, 6 and excurved above and below vein 3; a line formed of whitish striæ before termen, a terminal series of slight blackish lunules, and a fine white line at base of cilia. Hind wing brown with a golden gloss; cilia white with a brown line near base; the underside ochreous white irrorated with brown, the terminal area suffused with brown, a brown discoidal lunule and rather diffused postmedial and subterminal lines.

Ab. 1. Fore wing with the stigma forming a **Y**-mark.

Hab. Sikhim, 2 ♂, 2 ♀ type; Madras, Nilgiris, 1 ♀. *Exp.* 36–40 millim.

8297. **Phytometra furcifera.**

Plusia furcifera, Wlk. xii. 927 (1857); Hmpsn. Moths Ind. ii. p. 568.
Plusia mutans, Wlk. xxxiii. 839 (1865); Hmpsn. Ill. Het. B.M. ix. p. 101, pl. 162. f. 5.
Plusia ogovana. Holl. Psyche, vii. p. 9 (1894).
Plusia babooni, Beth.-Baker, Nov. Zool. xiii. p. 270 (1906).

Head and thorax pale rufous mixed with whitish; tegulæ with black line at middle and white tips; pectus and legs white tinged with brown, the tarsi brown ringed with white; abdomen white tinged with brown, the crest rufous and white, Fore wing white thickly irrorated and striated with red-brown and glossed with golden cupreous; subbasal line whitish defined on each side by red-brown, from costa to submedian fold; antemedial line whitish defined on each side by red-brown, angled inwards in cell and inwardly oblique below the cell; orbicular with whitish annulus, narrow, oblique; an oblique silvery-white **Y**-shaped stigma below

the cell, its tail thick, a patch of cupreous brown beyond it; reniform whitish, slightly defined at sides by cupreous brown and its centre defined by cupreous brown; postmedial line double, red-brown filled in with whitish, slightly bent outwards below costa, then minutely waved, somewhat incurved at discal fold, and oblique below vein 4; some white points beyond it on costa; subterminal line whitish defined on each side by cupreous brown, excurved below vein 7 and slightly angled outwards below veins 4, 3; two fine waved whitish lines before the terminal series of slight cupreous brown lunules; cilia white with two fine pale brown lines through them. Hind wing white tinged with cupreous brown, the terminal half suffused with cupreous brown; cilia white with a brown line near base; the underside white, the costal and terminal areas irrorated with brown, sinuous brown postmedial and subterminal lines with brown suffusion between them except towards inner margin.

Hab. Gaboon, Ogové R., type † *ogovana* in Coll. Holland; Transvaal (*Cholmley*), 1 ♂; Natal, Durban (*Leigh*), 1 ♂, 1 ♀; Punjab (*James*), 1 ♂ type, Dharmsála (*Hocking*), 2 ♀, Allahabad, 2 ♀; Sikhim (*Möller*), 1 ♀; Madras, Nilgiris (*Hampson*), 2 ♂; Ceylon, 1 ♀ type *mutans*, Dickoya (*Green*), 1 ♀, Pundaloya (*Green*), 1 ♂; Br. N. Guinea, Babooni (*Pratt*), type † *babooni* in Coll. Bethune-Baker; Queensland, Duaringa (*Lower*), 1 ♀. *Exp.* 32–34 millim.

8298. **Phytometra eugrapha**, n. sp. (Plate CCXXXVII. fig. 14.)

♂. Head and thorax red-brown mixed with ochreous whitish; antennæ ringed with black towards base then blackish; tegulæ with two blackish lines and whitish tips; tarsi brown ringed with white; abdomen brownish ochreous, the crests brown mixed with ochreous white. Fore wing ochreous tinged with brown with a golden gloss and irrorated and striated with black; subbasal line indistinct, whitish, sinuous, from costa to submedian fold, with black points before and beyond it below the cell; antemedial line indistinct, whitish defined on each side by brown, waved, with two slight black marks at inner margin; orbicular with whitish annulus incompletely defined by blackish, round; a whitish **U**-shaped stigma below the cell defined by blackish; reniform with whitish annulus and a blackish bar before it, its centre defined by black, rather produced at upper extremity; a very indistinct brown medial line, oblique to lower angle of cell and angled inwards at submedian fold; postmedial line double, brown filled in with pinkish white and with pinkish white suffusion beyond it, bent outwards below costa, then oblique and minutely waved, bent outwards below submedian fold, some whitish points beyond it on costa; subterminal line whitish defined on inner side by dark brown with golden brown suffusion before it, excurved below vein 7 and at middle, slightly angled outwards below vein 3, and ending at tornus; a terminal series of slight black lunules with two fine

waved whitish lines before it; cilia ochreous white. Hind wing ochreous suffused with golden brown, the terminal area darker; a terminal series of slight dark striæ; cilia white with brown striæ near base; the underside ochreous white irrorated with dark brown, a brown discoidal spot and rather diffused postmedial and subterminal lines.

Hab. Dutch N. Guinea, Fak-fak (*Pratt*), 2 ♂ type. *Exp.* 36 millim.

8299. Phytometra ablusa.

Plusia ablusa, Feld. Reis. Nov. pl. 110. f. 34 (1874).

Head and thorax pale rufous mixed with some red-brown and greyish; abdomen whitish suffused with rufous. Fore wing golden yellow tinged and irrorated with rufous, the end of cell, the area beyond the cell, and the terminal area suffused with pale purple, the veins with slight dark streaks; subbasal line red-brown, sinuous, from costa to vein 1; antemedial line red-brown, sinuous to median nervure, then obliquely curved; orbicular indistinct, golden, oblique elliptical; an elongate narrow oblique V-shaped golden stigma defined by red-brown below the cell, its lower part bent outwards; reniform faintly defined by red-brown; a red-brown medial line oblique to the reniform, then inwardly oblique; postmedial line red-brown, bent outwards below costa, obliquely curved to vein 3, then slightly incurved and excurved below submedian fold; subterminal line red-brown, slightly excurved below veins 7, 4, 3; a red-brown line before termen from costa to vein 3. Hind wing white tinged with red-brown, the veins and terminal half suffused with red-brown; cilia pale rufous with a red-brown line through them; the underside whitish irrorated with rufous, a diffused red-brown postmedial line.

Hab. Transvaal, Pretoria (*Distant*), 1 ♀; Natal, Estcourt (*Hutchinson*), 1 ♀; Cape Colony, Dordrecht, 1 ♂, Knysna. *Exp.* 36 millim.

8300. Phytometra lunata.

Noctua lunata, Fabr. Mant. Ins. ii. p. 163 (1787).
Plusia anargyra, Guen. Noct. ii. p. 351 (1852); Hmpsn. Moths Ind. ii. p. 575.
Plusia spoliata, Wlk. xii. 923 (1857); Hmpsn. Ill. Het. B.M. viii. p. 16, pl. 149. f. 7.
Plusia reticulata, Moore, Lep. Atk. p. 148 (1882).

Head and thorax purplish red-brown slightly mixed with grey, the tegulæ and dorsal crest in front with some fulvous yellow; antennæ ringed brown and white; abdomen grey-brown, the crests dark brown and grey. Fore wing chocolate-brown suffused with purple and slightly irrorated with white, the veins finely streaked with white; subbasal line fine, silvery-white, sinuous, from costa to submedian fold; antemedial line fine, silvery-white, excurved below costa, strongly incurved in cell, angled outwards at median

nervure, then oblique and sinuous; orbicular defined by silvery-white, narrow, oblique, constricted at middle; an elongate oblique V-shaped stigma defined by silvery-white below the cell, bent outwards at middle; reniform finely defined by silvery-white, produced at extremities and its outer edge strongly angled inwards at middle, an indistinct oblique brown line from it to inner margin; postmedial line fine, silvery-white, bent outwards below costa, then oblique and slightly waved, angled inwards at submedian fold, some white points beyond it on costa; subterminal line silvery-white slightly defined on inner side by brown, waved, incurved at vein 5 and submedian fold, the interspaces beyond it with fine silvery-white streaks; a fine waved silvery-white line just before termen; a fine whitish line at base of cilia. Hind wing red-brown, the interspaces of basal half whitish; a terminal series of small dark lunules slightly defined on inner side by white; cilia brownish white with a brown line through them; the underside whitish thickly irrorated with red-brown, a brown discoidal striga, diffused waved postmedial line, and subterminal shade.

Hab. S. Nigeria, Ilesha (*Humfrey*), 1 ♂; Congo (*Curror*), 1 ♀ type *spoliata*; Uganda, Entebbe (*Minchin*), 1 ♀; Madagascar, Betsileo (*Cowan*), 1 ♂, 1 ♀; Sikhim, 2 ♂ type *reticulata*; Madras, Nilgiris (*Hampson*), 1 ♀; Ceylon, Pundaloya (*Green*), 1 ♀; Selangor (*Meade-Waldo*), 1 ♀. *Exp.* 32–40 millim.

8301. **Phytometra violascens**, n. sp. (Plate CCXXXVII. fig. 15.)

♂. Head and thorax red-brown slightly mixed with grey-white; antennæ ringed dark brown and white towards base; tarsi brown ringed with white; abdomen whitish tinged with red-brown, the crests dark brown and grey at tips, the lateral tufts rufous. Fore wing chocolate-brown suffused with purple and slightly irrorated with dark brown, the veins with slight dark streaks; subbasal line brown slightly defined on outer side by silver, from costa to vein 1; antemedial line brown slightly defined on inner side by silver, incurved in cell, then oblique; orbicular slightly defined by silver, obliquely and slightly constricted at middle; a short broad V-shaped stigma slightly defined by silver below the cell, its lower part bent outwards; reniform slightly defined by silver and strongly constricted at middle; an oblique brown line from lower angle of cell to inner margin; postmedial line brown slightly defined on outer side by silver, bent outwards below costa, then oblique, slightly incurved at discal fold and below vein 3; subterminal line brown, slightly excurved below veins 4 and 3; a terminal series of small chocolate-brown lunules defined on inner side by a fine waved silvery line. Hind wing with the basal half whitish, the veins and inner area suffused with brown, the terminal half dark brown; cilia white with a brown line near base; the underside white irrorated with brown, a slight discoidal lunule, diffused postmedial line, and subterminal shade.

♀. Head, thorax, and fore wing redder brown, the last with the silver defining the marking almost obsolete.

Hab. Transvaal (*Cholmley*), 1 ♀, White R. (*Cooke*), 1 ♂ type; Natal, Durban (*Innes*), 1 ♂. *Exp.* 36–38 millim.

8302. **Phytometra microstigma.** (Plate CCXXXVII. fig. 16.)

Plusia microstigma, Hmpsn. A. M. N. H. (8) v. p. 433 (1910).

♀. Head, thorax, and abdomen reddish brown mixed with grey; antennæ with the shaft ringed with white towards base; tarsi ringed with white. Fore wing golden bronze-brown thickly irrorated with grey; traces of an oblique antemedial line; the stigma below the cell small, oblique V-shaped, bent outwards below, its outer arm and a small spot in its apex silvery-white; orbicular and reniform very indistinctly defined by grey, the former rather oblique elliptical, the latter constricted at middle; an oblique indistinct rather diffused line from lower angle of cell to inner margin; postmedial line indistinct, oblique, sinuous; traces of a dark subterminal line, excurved below vein 7, angled inwards at discal and submedian folds and outwards below vein 4; a series of minute white striæ just before termen. Hind wing uniform golden bronze-brown; the cilia with a pale line at base and white tips; the underside white thickly irrorated with brown, the terminal area broadly fuscous with some white irroration near termen.

Hab. Gold Coast (*Johnston*), 1 ♀ type. *Exp.* 26 millim.

8303. **Phytometra daubei.**

Plusia daubei, Boisd. Gen. & Ind. Meth. p. 159 (1840); Dup. Lép. Fr. Suppl. iii. p. 486, pl. 42. f. 1; Herr.-Schäff. Eur. Schmett., Noct. f. 206; Rmbr. Cat. Lep. S. And. pl. 6. f. 6; Mill. Icones, ii. pl. 70. ff. 5–7; Hmpsn. Moths Ind. ii. p. 572; Staud. Cat. Lep. pal. p. 239.

Plusia ciliaris, Wlk. xii. 928 (1857); Butl. Ill. Het. B.M. vi. p. 36, pl. 110. f. 5.

Head and thorax whitish mixed with reddish brown and some black-brown, the vertex of head with two blackish striæ; tegulæ with curved black line at middle; palpi with white ring at extremity of 2nd joint; the tibiæ at extremities and tarsi ringed with white; abdomen whitish suffused with pale brown, the crests darker, the lateral tufts of male ochreous. Fore wing white suffused with pale golden-brown and striated with dark brown; subbasal line white defined on each side by dark brown, from costa to vein 1; antemedial line silvery-white defined on each side by brown, angled outwards below costa and at median nervure, incurved in cell and submedian fold, then excurved; orbicular with silvery-white outline, its centre defined by blackish, very narrow and oblique; an elongate oblique silvery-white V-shaped stigma below the cell, extending below vein 2 to near the postmedial line, some golden-brown suffusion before and beyond it; reniform with silvery-white outline, its centre defined by blackish, constricted at

middle; postmedial line double, red-brown filled in with silvery-white and with minute black lunules on its inner side below veins 4 and 3, bent outwards below costa, slightly incurved at discal fold, then somewhat sinuous and slightly excurved at middle, a narrow white band beyond it and some small white spots on costa; subterminal line blackish, slightly waved, angled inwards below costa and at discal fold, excurved below vein 7, and angled outwards below veins 4 and 3; a terminal series of minute blackish lunules with a narrow white band before them traversed by a fine brown line; cilia whitish with a series of minute dark spots. Hind wing white tinged with golden brown, the terminal area suffused with golden brown except towards tornus; cilia white with small brown spots from apex to vein 2; the underside white, the costal area and terminal area to vein 2 irrorated with brown, a slight discoidal lunule and faint diffused postmedial and subterminal lines.

Hab. S. France, Leech Coll., Montpellier, Zeller Coll.; Spain, Leech Coll., Catalonia, Zeller Coll., Barcelona, Frey Coll.; Corsica; Sicily; Algeria, Biskra (*Eaton*), 1 ♂; Palestine; Punjab, Kulu (*Hocking*), 3 ♂, 1 ♀, Sultanpur (*G. Young*), 1 ♂, 2 ♀, Almorah (*Boys*), 1 ♂, Jubbulpur (*F. Butler*), 1 ♂; Nepal, 1 ♀ type *ciliaris*; Sikhim; Bengal, Pusa (*Lefroy*), 1 ♀. *Exp.* 30–32 millim.

Larva. Kirby, Butt. & Moths Eur. p. 271; Hffm. Raup. p. 135, pl. 32. f. 8.

Reddish brown with oblique dark lateral streaks. Food-plant, *Sonchus maritimus*.

8304. Phytometra indicator.

Plusia indicator, Wlk. xii. 922 (1857).
Plusia g-roseum, Guen. Maillard's Réunion, Lép. p. 42 (1862).

Head and thorax brown mixed with ochreous and some grey-white, the tegulæ with slight dark medial line and whitish tips; pectus, legs, and abdomen ochreous mixed with brown, the last with the crests blackish at tips. Fore wing greyish suffused and irrorated with dark chocolate-brown and with a slight cupreous gloss, the medial area with a deep chocolate-brown patch below the cell, the veins with slight pale streaks; subbasal line represented by double silvery striæ from costa and a small V-shaped mark below the cell, defined by black-brown; antemedial line silvery defined by brown, excurved below costa and obliquely incurved below the cell; orbicular with silvery outline, very narrow and oblique; a very elongate oblique silvery V-shaped stigma filled in with grey below the cell, its inner arm extending to the antemedial line and its apex almost to the postmedial line; reniform defined at sides by silvery striæ, constricted at middle and with small black spot on its outer edge; postmedial line silvery defined at sides by brown, bent outwards and obsolescent below costa, very slightly incurved at discal fold, and oblique below vein 3, a narrow

whitish band beyond it and some whitish points on costa; subterminal line blackish defined on outer side by some silver, excurved below vein 7, angled inwards at discal fold, excurved at middle, then very minutely dentate; a fine black terminal line preceded by two whitish lines with a fine brown line between them; cilia whitish with a slightly waved brown line through them. Hind wing ochreous white, the veins and terminal area suffused with brown; cilia white with an interrupted brown line through them; the underside ochreous white, the costal and terminal areas irrorated with brown, a slight discoidal striga and faint diffused postmedial and subterminal lines.

Hab. Congo (*Curror*), 1 ♀ type *indicator*; Mashonaland, Salisbury (*Marshall*), 1 ♀; Rhodesia, Bulawayo (*Marshall*), 3 ♂, 1 ♀; Transvaal, Pretoria (*Janse*), 1 ♀; Natal, Estcourt (*Hutchinson*), 2 ♂; Mauritius, Curepipe (*Tulloch*), 1 ♂, 1 ♀, Réunion. *Exp.* 28–32 millim.

8305. Phytometra obtusisigna.

Plusia obtusisigna, Wlk. xii. 930 (1857); Moore, Lep. Ceyl. iii. p. 71, pl. 152. ff. 1, 1*a*; Hmpsn, Moths Ind. ii. p. 570.

Head and thorax white mixed with red-brown, the patagia with oblique white line across them; tarsi brown ringed with white; abdomen white tinged with red-brown, the lateral tufts of male ochreous. Fore wing white irrorated with red-brown; double subbasal red-brown striæ filled in with white from costa and a sinuous black streak below the cell; antemedial line white defined on each side by red-brown, slightly excurved below costa and incurved in cell, then excurved; orbicular defined by white, narrow, oblique; an oblique white Y-shaped stigma below the cell; reniform with incomplete white outline and its centre defined by dark brown, constricted at middle where there is a small dark spot beyond it; a cupreous red-brown patch below end of cell beyond the stigma; postmedial line indistinctly double, red-brown filled in with whitish, slightly bent outwards below costa, then slightly sinuous, incurved at discal fold, oblique below vein 3 and excurved below submedian fold, some white points beyond it on costa; subterminal line white defined on inner side by cupreous red-brown, excurved below vein 7, angled outwards below vein 4, then sinuous; a fine white line just before termen with a series of minute black streaks beyond it and two more distinct spots towards apex; cilia white and red-brown with a fine waved white line through them. Hind wing white suffused with cupreous brown especially on terminal area; cilia white with a brown line through them; the underside white irrorated with red-brown, indistinct diffused brown postmedial and subterminal lines.

Ab. 1. Fore wing with U-shaped stigma with spot beyond its lower extremity.

Hab. Natal, Stanger (*Delvin*), 1 ♂; Bombay, Poona;

Madras, Belgaum (*Watson*), 1 ♂, Nilgiris (*Hampson*), 1 ♂, 1 ♀; Ceylon (*Templeton*), 1 ♂, 3 ♀ type, Badulla (*Yerbury*), 1 ♀; Burma, Rangoon (*Scott*), 1 ♂. *Exp.* 24–36 millim.

Larva. Green with white dorsal lines, subdorsal streaks, and lateral dots; black dots on 4th to anal somites; medial prolegs pale red.

8306. **Phytometra lectula.**

Prodenia lectula, Wlk. xv. 1679 (1858); Moore, Lep. Ceyl. iii. p. 73, pl. 146. f. 2; Hmpsn. Moths Ind. ii. p. 576.
Plusia kalitura, Feld. Reis. Nov. pl. 110. f. 24 (1874).

Head and thorax red-brown mixed with ochreous; abdomen ochreous tinged with rufous, the crests and ventral surface browner. Fore wing silvery-grey suffused with red-brown and irrorated with dark brown; subbasal line silvery defined on each side by red-brown towards costa below which it is excurved, below the cell defined on inner side by black, ending at vein 1 where it is met by an oblique silvery line from median nervure defined on outer side by black; antemedial line silvery-white, angled outwards below costa and excurved above vein 1; orbicular represented by an oblique silvery-white streak on its upper edge; a very elongate and oblique silvery-white V-shaped stigma below the cell extending to the postmedial line, filled in with yellowish and with a black point on the outer arm at median nervure; reniform very faintly defined by red-brown, constricted at middle and with a minute silvery striga on its inner edge and spot on outer; postmedial line double, red-brown, filled in with silvery-white between vein 4 and submedian fold and defined on outer side by a greyish shade, bent outwards below costa, then slightly waved, excurved at vein 5, then oblique, some minute whitish points beyond it on costa; subterminal line indistinctly double, red-brown filled in with greyish, minutely waved, with slight black streaks before it below veins 7 and 6 and with an oblique white mark on it at discal fold; a narrow whitish terminal band with a rufous shade before it with slight blackish marks on it and fine red-brown lines just before and on termen; cilia ochreous. Hind wing ochreous white tinged with rufous, the terminal area suffused with ochreous brown; cilia ochreous white; the underside ochreous white, the costal area irrorated with red-brown and the terminal area suffused with red-brown, a slight discoidal bar and diffused postmedial and subterminal lines.

Hab. Bengal (*Russell*), 2 ♂; Bombay, Kanara (*Ward*), 1 ♂, 1 ♀ type; Ceylon, Kegalle (*Alston*), 1 ♀. *Exp.* 28–36 millim.

8307. **Phytometra distalagma**, n. sp. (Plate CCXXXVII. fig. 17.)

♀. Head and thorax bright red-brown mixed with some grey-white, the back of head and tegulæ tinged with fiery red; pectus and legs whitish mixed with rufous; abdomen bright red-brown,

the ventral surface whitish tinged with rufous. Fore wing pale purplish tinged with red-brown and slightly irrorated with dark brown, a patch below end of cell and the terminal area except towards apex and tornus golden cupreous; antemedial line diffused, red-brown, curved; two small elongate obliquely placed silver spots below the cell, the upper with some rufous in centre; a diffused red-brown discoidal patch; an indistinct diffused oblique brown line from lower angle of cell to inner margin; postmedial line brown, bent outwards and obsolescent below costa, then oblique, slightly incurved at discal fold, incurved below vein 3 and excurved below submedian fold, some slight pale points beyond it on costa; subterminal line indistinct, brown, slightly excurved at vein 7 and oblique towards inner margin; a silvery-white line before termen from below apex to submedian fold. Hind wing whitish tinged with red-brown, the terminal area suffused with dark brown from below apex to near tornus; the underside white tinged with rufous and slightly irrorated with brown, a slight brown discoidal lunule and diffused postmedial and subterminal lines with a dark shade between them except towards costa.

Hab. Transvaal, Johannesburg (*Ross*), 1 ♀ type. *Exp.* 32 millim.

8308. **Phytometra brachychalcea**, n. sp.
(Plate CCXXXVII. fig. 18.)

Head and tegulæ fiery red and yellow, the latter with brown and white lines near base, at middle, and at tips; thorax red-brown, the dorsal crest with fiery red and yellow above, the patagia with oblique brown and white line at middle and brown and white tips; pectus yellow and fiery red in front; abdomen yellow tinged with rufous, the crests dark brown and white at tips. Fore wing chestnut-red striated with brown and irrorated with silvery-white, the postmedial and terminal areas except towards costa and inner margin brilliant metallic gold, emitting an oblique spur above and below vein 2 to the median nervure where it ends bluntly below the orbicular; subbasal line slight, silvery, oblique, sinuous, from costa to vein 1; antemedial line slight, silvery, waved, strongly incurved in the cell; orbicular and reniform with slight silvery outlines, the former narrow, oblique, the latter with its outer edge strongly constricted at middle; postmedial line double, red-brown filled in with grey, bent outwards below costa, then oblique, very slightly angled outwards at discal fold and vein 3 and bent outwards below submedian fold, hardly traceable on the gold area; some white points beyond it on costa; subterminal line red-brown, indistinct on the gold area, angled outwards at veins 7, 6, below veins 4 and 3, and at vein 1; the termen red-brown; a waved brown line at base of cilia. Hind wing yellowish white, the veins and terminal half suffused with red-brown; cilia whitish tinged with red-brown and with a red-brown line near base; the underside

yellowish white, the costal and terminal areas irrorated with red-brown, a brown discoidal striga and diffused postmedial and subterminal lines.

Hab. Japan, Tokio (*Maries*), 1 ♂, 1 ♀, Yokohama (*Jonas*), 2 ♀, Satsuma (*Leech*), 1 ♀, Tsuruga (*Leech*), 1 ♀; Loochoo Is. (*Pryer*), 1 ♂; Formosa (*Hobson*), 1 ♀; W. China, Chang-yang (*Pratt*), 1 ♀, Psu-tsu-fang, 1 ♂, Omei-shan, 1 ♂, Kwei-chow, 1 ♂, Ta-chien-lu (*Pratt*), 1 ♂, Moupin (*Kricheldorf*), 2 ♂; Assam (*Badgley*), 1 ♀, Shillong (*Parish*), 2 ♀; Madras, Nilgiris (*Hampson*), 2 ♂, 3 ♀ type; Ceylon (*Templeton, Lewis*), 2 ♂. *Exp.* 40–46 millim.

*8309. Phytometra bipartita.

Plusia bipartita, Snell. Tijd. v. Ent. xxiii. p. 71, pl. 6. f. 2 (1880).
Plusia ekeikei, Beth.-Baker, Nov. Zool. xiii. p. 270 (1906).

♂. Head and thorax fiery orange-red, the tegulæ with rufous lines at middle and tips and tipped with white, the patagia rufous mixed with white, the meso- and metathoracic crests tipped with rufous and white; pectus and legs yellowish tinged with rufous; abdomen yellow tinged with rufous, the basal crests rufous. Fore wing grey-white suffused and striated with rufous to the postmedial line, then brilliant metallic gold striated with rufous, the gold extending to cell above and below base of vein 2; subbasal line represented by slight double inwardly oblique white striæ from costa; antemedial line slight, double filled in with whitish, excurved to median nervure, then inwardly oblique and sinuous; orbicular and reniform slightly defined by white, the former oblique V-shaped, somewhat constricted at middle, the latter strongly constricted at middle; postmedial line rufous, very oblique from costa to middle of submedian fold, then excurved and indistinctly double; subterminal line rufous, slightly angled at vein 7, then oblique and slightly excurved below submedian fold; a fine rufous terminal line; cilia white mixed with rufous and with waved rufous line through them. Hind wing yellowish white, the terminal half suffused with red-brown; cilia white with a red-brown line through them; the underside yellowish white with faint diffused red-brown postmedial line from costa to vein 2.

Hab. Celebes; Br. N. Guinea, Ekeikei (*Pratt*), type † ♂ *ekeikei* in Coll. Bethune-Baker. *Exp.* 38 millim.

b. Hind tarsi of male without comb of long spines on 1st joint.
  *a*¹. Fore wing with the stigma below the cell U-shaped with a spot beyond its lower extremity or conjoined to it.
    *a*². Fore wing with the medial area below the cell suffused with golden cupreous.
      *a*³. Fore wing with the stigma below the cell large, the U-mark broad, the postmedial line angled inwards at submedian fold .. ... *chalcytes*.

b^3. Fore wing with the stigma small, the **U**-mark narrow.
a^4. Fore wing with the postmedial line incurved below vein 5 ..... *basigera.*
b^4. Fore wing with the postmedial line almost evenly curved ..... *impulsa.*
b^2. Fore wing with the medial area below the cell suffused with golden bronze.
a^3. Fore wing with the postmedial line incurved below vein 5.
a^4. Fore wing with two small black spots below the cell before the antemedial line. *meretricia.*
b^4. Fore wing without two small black spots below the cell before the antemedial line. *longicornis.*
b^3. Fore wing with the postmedial line excurved and waved at middle.
a^4. Fore wing without sinuous silvery striga on the reniform ..... *caudata.*
b^4. Fore wing with sinuous silvery striga on the reniform ..... *argentifera.*
c^2. Fore wing with the medial area below the cell without golden-brown suffusion.
a^3. Fore wing with the tail of the **Y**-shaped stigma or spot beyond the **U**-mark triangular ..... *calceolaris.*
b^3. Fore wing with the spot beyond the **U**-shaped stigma rounded ..... *signata.*
b^1. Fore wing with the stigma below the cell oblique **V**-shaped without spot beyond it, sometimes reduced to a small elliptical mark or obsolete.
a^2. Fore wing cupreous red ..... *rubida.*
b^2. Fore wing without cupreous red tinge.
a^3. Fore wing with the inner edge of the stigma below the cell angled inwards above submedian fold.
a^4. Fore wing with minute triangular black marks defined by white at middle of subterminal line ..... *accentifera.*
b^4. Fore wing without triangular black marks defined by white at middle of subterminal line ..... *phocina.*
b^3. Fore wing with the inner edge of the stigma below the cell not angled inwards above submedian fold.
a^4. Fore wing with the orbicular defined by white.
a^5. Fore wing with the orbicular rounded... *abrota.*
b^5. Fore wing with the orbicular oblique and narrow.
a^6. Fore wing without black streak before the subterminal line in discal fold.
a^7. Fore wing with the postmedial line not strongly angled inwards in submedian fold ..... *oxygramma.*
b^7. Fore wing with the postmedial line strongly angled inwards in submedian fold ..... *cebeæ.*
b^6. Fore wing with black streak before the subterminal line in discal fold .. ... *albostriata.*

c^5. Fore wing with the orbicular obsolete.
a^6. Fore wing with dentate subterminal line with short black streak before it in discal fold ..... *subchalybæa*.
b^6. Fore wing without subterminal line or streak in discal fold..... *gorilla*.

8310. Phytometra chalcytes.

Noctua chalcytes, Esp. Schmett. iv. p. 447, pl. 141. f. 3 (1789); Mill. Icones, i. pl. 5. ff. 1–4; Staud. Cat. Lep. pal. p. 238.
Noctua quæstionis, Fabr. Ent. Syst. iii. 2, p. 81 (1794).
Noctua bengalensis, Rossi, Mant. Ins. ii. p. 22, pl. 3. f. P (1794).
Noctua chalcytis, Hübn. Eur. Schmett., Noct. f. 276 (1802); Frr. Neue Beitr. pl. 47. f. 2.
Plusia eriosoma, Doubl. Dieffenbach's New Zealand, ii. p. 285 (1843); Hmpsn. Moths Ind. ii. p. 569.
Plusia verticillata, Guen. Noct. ii. p. 344 (1852); Moore, Lep. Ceyl. iii. p. 70, pl. 152. f. 6.
Plusia integra, Wlk. xii. 931 (1857).
Plusia adjuncta, Wlk. xxxiii. 840 (1865).
Plusia buchholzi, Plotz, Stett. Ent. Zeit. xli. p. 298 (1880).
Plusia agnata, Staud. Rom. Mém. vi. p. 547 (1892); id. Cat. Lep. pal. p. 238.
Plusia dinava, Beth.-Baker, Nov. Zool. xiii. p. 270 (1906).
Plusia cohærens, Schultz, Intern. Ent. Zeit. i. p. 32 (1907).

Head and thorax rufous, the head and tegulæ yellower, the thoracic crest paler rufous above; pectus yellowish white; abdomen yellowish white suffused with brown, the crests rufous at tips, the

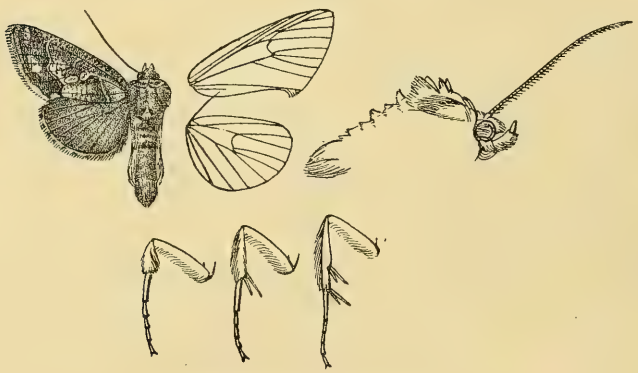


Fig. 122.—*Phytometra chalcytes*, ♂. ½.

lateral anal tufts of male blackish brown. Fore wing bright rufous with some brown irroration and striæ, the medial area below submedian fold and before the postmedial line and the terminal area mostly suffused with gold; a subbasal golden striga from

costa; antemedial line fine, golden, interrupted in cell by an oblique yellowish bar from costa, inwardly oblique and very slightly sinuous below the cell; two obliquely placed silvery spots below middle of cell, the upper rounded, the lower elliptical; reniform represented by four slight whitish and black points at the angles; an indistinct sinuous rufous medial line beyond the cell, oblique below vein 3; postmedial line double, rufous filled in with gold, excurved below costa and at vein 4, then oblique to submedian fold, then excurved; subterminal line very indistinct, rufous, excurved at vein 7, angled outwards below veins 4, 3 and ending at tornus, some rufous suffusion beyond its costal half; a slight silvery-white striga from costa before apex; cilia pale with a blackish mark at vein 4 and deep rufous towards tornus. Hind wing red-brown with a cupreous gloss; cilia white with a red-brown line near base; the underside brownish white, the terminal area irrorated with brown, a faint brown medial shade and indistinct diffused postmedial line with darker brown patch at costa and some brown suffusion beyond it.

Ab. 2. *quæstionis*. Browner; fore wing with less golden suffusion.

Ab. 1. *cohærens*. Fore wing with the U-shaped stigma conjoined to the spot.

Hab. Britain, Stainton Coll.; France, Sand Coll.; Germany, Zeller & Frey Colls.; Austria, Carniola; Hungary; Switzerland, Zeller Coll.; Spain, Leech Coll., Barcelona (*Lederer*); Italy, Venice (*A. H. Jones*), Tuscany; Malta (*Irby*); Madeira (*Wollaston*), 1 ♂; Canaries (*Leech*), 1 ♂, 2 ♀, La Laguna (*Eaton*), 1 ♀, Guimar (*Walsingham*), 1 ♀; Greece; Balkan States; Asia Minor, Pontus, Bithynia, Taurus; Syria, Beirut, 1 ♂, 1 ♀; Madagascar; Seychelles, Mahé (*Thomasset*), 1 ♂, 1 ♀; Rodriguez (*Manders*), 1 ♂; Mauritius, Curepipe (*Tulloch*), 1 ♀; E. Siberia, Ussuri; Japan, Fushiki (*Leech*), 1 ♀, Kyukyu, 1 ♀, Satsuma (*Leech*), 1 ♂, Yokohama (*Jonas, Manley*), 4 ♀; Loo-choo Is. (*Pryer*), 2 ♂; Corea, Gensan (*Leech*), 1 ♂, Fusan (*Ichikawa*), 1 ♀; N. China, Wei-ha-wei (*de la Garde*), 1 ♂; Centr. China, Foo-chow (*Lay*), 1 ♂, Shanghai (*J. J. Walker*), 1 ♂, Ship-y-shán, 1 ♂; W. China, Nitou, 1 ♂, Digam Pani (*Bailey*), 1 ♂; S. China, Pagoda (*de la Garde*), 1 ♀; Hongkong (*J. J. Walker*), 1 ♂; Formosa, 1 ♂, 1 ♀; Punjab, Kulu, Sultanpur (*G. Young*), 1 ♀, Dharmsála (*Hocking*), 3 ♀, Manpuri, 1 ♀, Allahabad, 2 ♀; Sikhim (*Dudgeon, Möller*), 1 ♂, 4 ♀; Assam, Silhet (*Stainsforth*), 1 ♂; Bengal, Pusa (*Lefroy*), 1 ♂, Calcutta, 1 ♀; Sind, Karáchi (*Swinhoe*), 2 ♂; Bombay, 1 ♂, Kutch, 1 ♂, 1 ♀; Madras, Nilgiris (*Hampson*), 1 ♀, Ceylon (*Templeton*), 2 ♂; Burma, Moulmein (*Clerk*), 1 ♀, Myingyan (*Watson*), 2 ♀; Andamans, 1 ♂; Borneo, Sarawak (*Wallace*), 1 ♀; Philippines, 1 ♀; Java (*Horsfield*), 3 ♂ type *verticillata*; Cocos Keeling I. (*Wood-Jones*), 1 ♂, 2 ♀; Dutch N. Guinea, Mimika R. (*Wollaston*), 1 ♀; Br. N. Guinea,

Dinawa (*Pratt*), type † *dinawa* in Coll. Bethune-Baker; D'Entrecasteaux Is., Fergusson I. (*Meek*), 1 ♂; N. Australia, Port Darwin (*Buckland, J. J. Walker*), 2 ♂, 1 ♀; Queensland, Moreton Bay (*Diggles*), 1 ♀ type *adjuncta*, Brisbane (*Lucas, Turner*), 2 ♂, 2 ♀; N. S. Wales (*J. J. Walker*), 1 ♂, Sydney (*Lambert, Mathew, de la Garde*), 2 ♂, 2 ♀; N. Zealand (*Colenso*), 1 ♂, 1 ♀, Auckland (*Sinclair, Bolton*), 2 ♂, 1 ♀ type *eriosoma*, Marlborough Prov. (*Skelton*), 1 ♂, 1 ♀, Wellington (*Mathew*), 1 ♂; Fiji (*Mathew*), 1 ♀; Tahiti (*J. J. Walker*), 1 ♂, 1 ♀; Tonga (*Mathew*), 1 ♂; Society Is., Eimeo I. (*Mathew, J. J. Walker*), 2 ♂, 2 ♀, Rap-a (*J. J. Walker*), 2 ♂; Marquesas (*J. J. Walker*), 1 ♀; Hawaii, Waianea Mts. (*Perkins*), 1 ♂, 1 ♀, Kona (*Perkins*), 1 ♀, Ohaa (*Perkins*), 1 ♀, Oahu (*Blackburn*), 1 ♂, 2 ♀. *Exp.* 34–46 millim.

Larva. Kirby, Butt. & Moths Eur. p. 270; Hffm. Raup. p. 134, pl. 35. f. 8.

Green with numerous waved whitish streaks on dorsal area and more distinct lateral stripe. Food-plants: *Urtica, Salvia, Echium, Marrubium*, in India on *Ficus*. 6–8.

8311. **Phytometra basigera.** (Plate CCXXXVII. fig. 19.)

Plusia basigera, Wlk. xxxiii. 836 (1865); Ottolengui, J. N.Y. Ent. Soc. x. pl. ix. f. 5; Druce, Biol. Centr.-Amer., Het. i. p. 332; Smith, Cat. Noct. N. Am. p. 255.

Plusia laticlavia, Morr. Ann. Lyc. Nat. Hist. N.Y. xi. p. 98 (1875).

Head and tegulæ fiery red, the latter tipped with brown and grey; thorax red-brown mixed with some grey, the patagia with slight oblique grey line near base; palpi, pectus, and legs rufous; abdomen rufous, the sides whitish at base, the crests deeper rufous. Fore wing purplish grey suffused with red-brown and striated with brown, the inner half of medial area and the terminal area towards apex suffused with cupreous gold, the veins of terminal area with slight dark streaks; subbasal line silvery, from costa to submedian fold; a slight blackish striga from cell before the antemedial line, which is silvery defined on inner side by brown, excurved below costa, incurved in cell, then oblique; a silvery stigma below the cell consisting of an oblique U-shaped mark with silvery point above its outer arm in the cell and an elliptical spot beyond its lower extremity; reniform slightly defined by silver and with slight blackish marks in its upper and lower extremities, strongly constricted at middle; postmedial line blackish defined on inner side by purple-grey and by silver towards inner margin, excurved below costa, incurved below vein 4, and slightly excurved below submedian fold; subterminal line slight, red-brown, excurved below vein 7, then oblique and slightly excurved below veins 4 and 3; a slight red-brown line before termen from apex to vein 3, the area beyond it violaceous white; a fine waved dark terminal line. Hind wing whitish suffused with cupreous red-brown; a fine brown terminal line with whitish line before it from apex to vein 3; cilia white tinged with red-brown; the underside white tinged

with rufous, a small brown discoidal spot, curved postmedial line, and diffused subterminal line.

Hab. U.S.A. (*Carter*), 1 ♀ type, New York, New Jersey, Virginia, 1 ♂; Mexico, Mexico City (*Hoege*), 1 ♀, Godman-Salvin Coll. *Exp.* 34–38 millim.

8312. **Phytometra impulsa.**

Plusia impulsa, Wlk. xxxiii. 838 (1865); Hmpsn. Ill. Het. B.M. ix. p. 100, pl. 162. f. 1 l; id. Moths Ind. ii. p. 573.

Head and thorax purplish red mixed with fiery red; tegulæ with whitish tips; patagia with oblique whitish line at middle and whitish tips; metathoracic crest whitish at tips; fore and mid tibiæ brownish grey, the hind tibiæ and the tarsi brownish white; abdomen white, the dorsal crests rufous, the lateral tufts of male yellowish. Fore wing purple-grey suffused and irrorated with purple-brown, the end of cell, medial area below the cell, and the apex gold suffused with fiery red; antemedial line double, brown filled in with silvery-white, angled outwards below costa, then oblique; orbicular defined by whitish and its lower part by silver, narrow, oblique; a narrow oblique silver U-shaped stigma below the cell with a spot beyond its lower extremity; reniform with slight silvery outline and some fiery red and gold in centre, its inner edge oblique, its outer strongly constricted at middle where there is some red and gold beyond it; postmedial line double, brown, the outer line darker, obliquely and almost evenly curved; subterminal line brown slightly defined on outer side by whitish, excurved below vein 7 and slightly at middle; a narrow pinkish white band just before termen defined on each side by dark brown lines. Hind wing white, the veins and terminal half suffused with red-brown; the underside white, the costal and terminal areas irrorated with brown, a slight brown discoidal lunule, curved postmedial line, and subterminal shade.

Hab. Travancore, Trivandrum (*Fergusson*), 1 ♀; Ceylon, Pundaloya (*Green*), 2 ♂, 1 ♀. *Exp.* 24–32 millim.

8313. **Phytometra meretricia.** (Plate CCXXXVII. fig. 20.)

Plusia meretricia, Schaus, A. M. N. H. (8) vii. p. 51 (1911).

♂. Head and thorax pale red-brown, the tegulæ, an oblique line across patagia, and the tips of scales of metathoracic crest grey; legs grey-brown, the tarsi ringed with whitish; abdomen grey, brown, the crests dark brown, the lateral tufts of hair at extremity rufous. Fore wing purple-grey, the medial area below the cell and the area before and beyond the subterminal line suffused with cupreous brown; a slight sinuous brown subbasal line from costa to submedian fold, placed on some brown suffusion and with two small black spots beyond its lower extremity; antemedial line cupreous brown slightly defined on outer side by white, somewhat

excurved below costa, then inwardly oblique; orbicular purple-grey with its centre and circumference slightly defined by brown, oblique U-shaped; reniform with incomplete silvery annulus, very strongly constricted at middle, some cupreous brown in its upper part and some blackish in lower part, some cupreous brown before and beyond it; a silvery stigma below the cell formed by a small U-shaped spot with round spot below it; postmedial line cupreous brown, excurved from below costa to vein 5, then incurved and slightly bent outwards above vein 1, some white points beyond it on costa; subterminal line indistinct, dark, excurved below vein 7, angled inwards at discal fold, then waved and ending at tornus; a slight whitish line before termen from apex to vein 4; a fine dark terminal line; cilia whitish with traces of a brown line through them. Hind wing grey-brown, the hair on inner margin with a reddish tinge; cilia whitish with a slight brown line through them; the underside with the basal half whitish tinged with brown, the terminal half grey-brown, traces of a curved postmedial line and subterminal shade.

Hab. Costa Rica, Juan Vinas (*Schaus*), 1 ♂. *Exp.* 44 millim.

8314. **Phytometra longicornis.**

Plusia longicornis, Druce, Biol. Centr.-Am., Het. i. p. 332, pl. 30. f. 17 (1889).

♂. Head and thorax dark brown mixed with purple-grey; antennæ with the basal joint white at sides; pectus and legs grey-brown, the tarsi ringed with white; abdomen grey-brown, the crests dark brown mixed with purple-grey. Fore wing purple-grey suffused in parts with brown, the medial area below the cell and the area before the subterminal line deep cupreous brown; traces of a sinuous grey subbasal line from costa to submedian fold on a patch of brown suffusion; antemedial line dark slightly defined on outer side by white, somewhat excurved below costa, then inwardly oblique; orbicular and reniform with brownish centres and purple-grey annuli defined by dark brown, oblique elliptical, the latter with white points below on inner and outer sides; a silvery stigma below the cell formed by a small oblique U-shaped mark with elliptical spot beyond its lower extremity; postmedial line dark brown, bent outwards below costa, excurved to vein 5, then incurved, and again slightly excurved below submedian fold, some white points beyond it on costa; subterminal line dark brown with cupreous brown suffusion before it and beyond it below apex, excurved below vein 7, then oblique; a dark line before termen from apex to vein 3 and a fine dark terminal line. Hind wing purplish grey suffused with brown; cilia whitish at tips; the underside whitish tinged with purple-grey and irrorated with brown, a dark brown discoidal lunule and broad postmedial shade.

Hab. Costa Rica, Juan Vinas (*Schaus*), 1 ♂; Panama, Chiriqui; Ecuador, Sarayacu. *Exp.* 36 millim.

8315. **Phytometra caudata.** (Plate CCXXXVII. fig. 21.)

Plusia caudata, Schaus, Pr. U.S. Nat. Mus. xxx. p. 105 (1906).

♂. Head and thorax red-brown, some of the scales tipped with grey and the metathoracic crest with blackish mixed; tarsi ringed with whitish; abdomen pale reddish brown, the crests deep red-brown. Fore wing brownish grey with a metallic golden gloss, suffused in parts with blackish brown and irrorated with black; subbasal line represented by double pale striæ from costa; antemedial line pale, inwardly oblique, sinuous; orbicular a small pale oblique elliptical annulus; reniform slightly defined by black points, narrow, somewhat dilated above and angled inwards on median nervure; a silvery gamma-shaped stigma below the cell; postmedial line brown defined on each side by flesh-colour, bent outwards below costa, then oblique, waved, angled inwards above vein 1, some whitish points beyond it on costa; subterminal line pale defined on inner side by dark brown suffusion, slightly angled outwards at veins 7, 6, then sinuous; a terminal series of slight blackish lunules. Hind wing cupreous brown, the cilia whitish with a brown line through them; the underside with the basal half whitish irrorated with cupreous brown, the terminal half suffused with cupreous brown bounded on inner side by a darker postmedial band.

Hab. Mexico, Orizaba (*Schaus*), type † ♂ in U.S. Nat. Mus.; Costa Rica, Juan Vinas (*Schaus*), 1 ♂. *Exp.* 38 millim.

8316. **Phytometra argentifera.** (Plate CCXXXVII. fig. 22.)

Plusia argentifera, Guen Noct. ii. p. 352 (1852).
Plusia secundaria, Wlk. xii. 933 (1857).

Head and thorax pale brown mixed with grey-white; tegulæ and patagia at tips and an oblique line across the latter white; pectus and legs white and brown; abdomen white suffused with bronze-brown, the crests red-brown and white, the ventral surface white irrorated with bronze-brown. Fore wing grey-white suffused with golden bronze and irrorated with blackish; subbasal line silvery-white defined on each side by red-brown, from costa to vein 1, a red-brown patch beyond it in submedian interspace with a slight silver streak in the fold; antemedial line silvery-white defined on each side by red-brown, angled outwards below costa, incurved in cell, then oblique, its outer edge angled outwards below submedian fold; orbicular represented by a slight silvery-white lunule in lower part of cell, conjoined to an oblique brilliant silvery-white stigma below the cell composed of two obliquely placed spots, the upper rather V-shaped, with some brownish in centre; reniform with its upper part defined by slight black-brown marks, its lower part with a curved silvery-white striga angled outwards at lower angle of cell; postmedial line double, red-brown filled in with greyish

and with silver at inner margin, bent outwards below costa, incurved at discal fold, then oblique and minutely waved, angled inwards at submedian fold, some white points beyond it on costa and a white shade from costa to discal fold; subterminal line dark brown, excurved at vein 7 and middle and angled inwards below vein 5 and at submedian fold, a black streak before it at discal fold and bronze-brown shades beyond it from costa to discal fold and at middle, defined on outer side by a slight white line before termen; a fine dark brown terminal line dilated into a small spot at middle; a fine white line at base of cilia. Hind wing whitish suffused with golden brown, the terminal area darker; cilia white with a series of brown striæ near base at the veins; the underside white tinged with red-brown, the costal area irrorated with red-brown, the terminal area suffused with brown, a slight brown discoidal lunule.

Ab. 1. *secundaria*. Fore wing with the stigma forming a bilobate mark.

Hab. Queensland (*Higlett*), 1 ♀, Brisbane (*Turner*), 2 ♀, Moreton Bay (*Diggles*), 3 ♀; N. Australia, Alexandria (*Stalker*), 2 ♂; W. Australia, Sherlock R. (*Clements*), 1 ♂, 1 ♀, Cossack (*J. J. Walker*), 2 ♂, 1 ♀, Swan R. (*Richardson*), 1 ♀; N. S. Wales, Sydney (*Lambert, Raynor*), 1 ♂, 4 ♀, Broken Hill (*Lower*), 1 ♀; Victoria, Gisborne (*Lyell*), 1 ♂; S. Australia, Adelaide (*Wilson*), 2 ♂, 2 ♀ type *secundaria*; Tasmania, Hobart (*A. J. Smith, J. J. Walker*), 2 ♀, Ulverstone (*Lyell*), 1 ♂. *Exp.* 34–40 millim.

8317. **Phytometra calceolaris.** (Plate CCXXXVII. fig. 23.)

Plusia calceolaris, Wlk. xii. 915 (1857).

♂. Head and thorax grey-brown; abdomen grey tinged with brown, the ventral surface grey-brown. Fore wing purplish grey mostly suffused with cupreous brown, the medial area deep chocolate-brown below the cell and beyond inner half of the antemedial line; subbasal line slight, greyish, from costa to submedian fold; antemedial line slight, grey, hardly traceable to median nervure, then inwardly oblique; an oblique silvery **Y**-shaped mark below the cell, its tail dilated into an elliptical knob; reniform with slight pale outline, strongly constricted at middle, with black-brown marks in its upper and lower extremities and its inner side defined by a silvery striga below; postmedial line very indistinct, pale faintly defined on each side by brown, bent outwards below costa, excurved to vein 5, then incurved to lower angle of cell and erect to inner margin, some whitish points beyond it on costa; subterminal line slight and incurved from costa to vein 7 where it is met by an oblique dark chocolate-brown shade from apex, then defined on inner side by chocolate-brown suffusion, excurved below vein 7, bent inwards at vein 5 and sinuous to tornus; a slight sinuous pale line before termen from apex to vein 4. Hind wing

grey suffused with brown, the terminal area darker; cilia brownish grey; the underside greyish brown with traces of a diffused postmedial shade.

♀. Fore wing with small **V**-shaped silvery mark below the cell with elliptical spot beyond its lower extremity.

Hab. Jamaica (*Kaye*), 1 ♀; Haiti (*Tweedie*), 1 ♂ type *Exp.* 34–38 millim.

8318. **Phytometra signata.** (Plate CCXXXVII. fig. 24.)

Noctua signata, Fabr. Ent. Syst. iii. 2, p. 81 (1792); Moore, Lep. Ceyl. iii. p. 71, pl. 151. f. 4; Hmpsn. Moths Ind. ii. p. 568.
Plusia diminuta, Wlk. xxxiii. 837 (1865).

Head and thorax pale red-brown; basal joint of antennæ with a white ring; tegulæ at tips and an oblique line across patagia whitish; tarsi ringed with white; abdomen whitish tinged with rufous, the crests red-brown. Fore wing red-brown with a greyish tinge and glossed with golden cupreous; subbasal line silvery-whitish defined on inner side by brown, ending at submedian fold; a black striga before it below the cell and two black points with a minute silvery streak between them on outer side; antemedial line silvery, angled outwards below costa, incurved in cell, then oblique and sinuous; an oblique silvery **U**-shaped stigma below the cell with a round spot beyond its lower extremity; reniform indistinctly defined by silver at sides, strongly constricted at middle and with four blackish points in its extremities; postmedial line indistinctly double filled in with silvery-whitish, excurved to vein 5, then incurved and again excurved below submedian fold, some whitish points beyond it on costa; subterminal line very indistinct, brown, waved, angled outwards at vein 7 and inwards at discal fold; some whitish on termen from apex to vein 2 and a fine white line at base of cilia. Hind wing whitish suffused with cupreous brown; cilia white with a brown line through them; the underside white slightly irrorated with brown, a slight brown discoidal striga with bar above it from costa, diffused brown postmedial and subterminal lines with brown suffusion between them.

Hab. Sierra Leone (*Foxcroft*), 1 ♀ type *diminuta*; Natal, Durban (*Leigh*), 1 ♂; Mauritius (*Manders*), 1 ♀; Centr. China, Ichang (*Hobson*), 1 ♀; Madras, Gooty (*Campbell*), 1 ♀, Calicut (*Cardew*), 1 ♀; Ceylon, 2 ♂; Burma, Mandalay (*Bingham*), 1 ♂; Java (*Horsfield*), 4 ♂, 2 ♀; Fiji (*Mathew*), 1 ♀. *Exp.* 30–34 millim.

8319. **Phytometra rubida.** (Plate CCXXXVII. fig. 25.)

Autographa rubidus, Ottolengui, J. N.Y. Ent. Soc. x. p. 67, pl. vi. f. 4 (1902); Dyar, Cat. Lep. N. Am. p. 200.

♀. Head and thorax bright rufous mixed with whitish, the tips of tegulæ and patagia and an oblique line across the latter whitish; abdomen reddish brown mixed with grey, the crests rufous and

whitish. Fore wing cupreous red mixed with purplish grey and slightly irrorated with black-brown; subbasal double red-brown striæ from costa; antemedial line red-brown defined on inner side by whitish and on both sides towards costa, angled outwards below costa and obliquely curved below the cell; an oblique Y-shaped silvery-white stigma below the cell, filled in with rufous and defined by blackish; reniform with faint pale annulus and its centre defined by dark brown, open above and strongly constricted at middle; traces of a sinuous medial red-brown line; postmedial line double, red-brown filled in with whitish, bent outwards below costa, then oblique and very slightly waved, angled inwards at vein 2, then excurved, some whitish points beyond it on costa; subterminal line dark brown with some dark suffusion before it at discal fold, excurved below vein 7 and angled outwards below veins 4 and 3; a terminal dark brown line defined on inner side by a whitish line; a fine whitish line at base of cilia. Hind wing whitish suffused and irrorated with red-brown, the terminal area red-brown; cilia white with a brown line through them; the underside whitish tinged with rufous and irrorated with red-brown, the terminal area suffused with red-brown, a small brown discoidal lunule and indistinct postmedial line.

Hab. Canada, New Brunswick, St. John, Manitoba, Cartwright, Alberta, Calgary (*Wolley-Dod*), 1 ♀. *Exp.* 40 millim.

8320. **Phytometra accentifera.**

Plusia accentifera, Lef. Ann. Soc. Linn. Paris, 1827, p. 94, pl. 5. ff. 1, 2; Mill. Icones, pl. 70. ff. 2–4; Staud. Cat. Lep. pal. p. 239.
Plusia laureum, Frr. Neue Beitr. i. p. 43, pl. 23. f. 3 (1831).

Head and thorax ochreous tinged with reddish brown, the tegulæ at tips and the patagia above edged with brown and grey, the metathoracic crest tipped with brown; tarsi brown ringed with white; abdomen ochreous, the crests red-brown and grey. Fore wing greyish ochreous tinged and irrorated with red-brown; subbasal line slight, ochreous defined on each side by red-brown, from costa to vein 1, a red-brown patch beyond it below the cell; antemedial line indistinct, ochreous defined on each side by red-brown, oblique, waved, a blackish mark before it at inner margin; orbicular with faint ochreous annulus defined on outer side by brown, narrow, oblique; an oblique stigma slightly defined at sides by silver below the cell, its lower extremity produced to a slight point on inner side and a longer point on outer, a chocolate-brown patch beyond it below and beyond lower end of cell; reniform chocolate-brown faintly defined at sides by ochreous; postmedial line double, red-brown filled in with ochreous, bent outwards below costa, then slightly waved, excurved at middle, then incurved, some ochreous points beyond it on costa; subterminal line slight, silvery defined on inner side by chocolate-brown shades from below costa to vein 4 and towards inner margin, excurved below vein 7, incurved at middle to the postmedial line, and with slight dentate

black marks defined by silvery-white below veins 4 and 3; a terminal series of slight blackish lunules defined on inner side by an ochreous line from costa to vein 2 with a chocolate-brown shade before it expanding into a triangular patch at middle, and a brown spot above tornus; cilia with a slight waved red-brown line near base. Hind wing ochreous suffused with red-brown especially on terminal area; cilia whitish with some red-brown striæ near base; the underside ochreous irrorated with red-brown, a rather diffused postmedial line with red-brown band beyond it except towards costa.

Hab. Spain, Zeller, Frey, and Leech Colls.; ? Corsica; Sicily; ? Crete; Syria. *Exp.* 30–34 millim.

Larva. Kirby. Butt. & Moths Eur. p. 270; Hffm. Raup. p. 134.

Green, with pale and dark dorsal and subdorsal lines and ill-defined pale lateral stripe. Food-plant, *Mentha*. 1–2.

8321. **Phytometra phocina**, n. sp. (Plate CCXXXVII. fig. 26.)

♀. Head and thorax grey-brown; tegulæ and patagia with grey tips; metathoracic crest with some reddish yellow above and grey tips; abdomen grey-brown. Fore wing purplish grey-brown, the medial area below the cell and the terminal area deep brown with a golden bronze gloss; subbasal line brown defined on outer side by silvery-grey, sinuous, from costa to vein 1; antemedial line brown defined on outer side by silvery-grey, oblique to median nervure, then inwardly oblique; orbicular and reniform slightly defined by grey, the former elliptical, the latter somewhat constricted at middle; an oblique V-shaped stigma defined by silvery-grey below the cell, slightly angled inwards below and its apex bent outwards to the postmedial line; postmedial line double, brown filled in with silvery-grey, bent outwards below costa, then oblique and slightly waved to the submedian fold where it is angled inwards, then erect; subterminal line dark brown defined on outer side by silvery-grey, excurved below vein 7, then erect to tornus; a faint waved whitish line before termen. Hind wing brown, the interspaces of basal half whitish; cilia whitish with a brown line through them; the underside whitish irrorated with brown, a brownish discoidal striga, rather diffused postmedial line incurved below vein 3, and subterminal shade.

Hab. Brazil, Rio Janeiro (*Wilson*), 1 ♀ type. *Exp.* 38 millim.

8322. **Phytometra abrota.**

Plusia abrota, Druce, Biol. Centr.-Am., Het. i. p. 333, pl. 30. f. 19 (1889); Ottolengui, J. N.Y. Ent. Soc. x. p. 67, pl. ix. f. 4; Dyar, Cat. Lep. N. Am. p. 200.

Head and thorax grey-brown; tegulæ and patagia with the tips grey; metathoracic crest with some fulvous yellow above and grey tips; abdomen grey-brown, the lateral and genital tufts reddish yellow. Fore wing purplish grey-brown, the medial area below the

cell and the medial part of terminal area dark brown with some golden bronze suffusion; subbasal line brown defined on outer side by grey, from costa to vein 1; antemedial line brown defined on outer side by grey, oblique to median nervure, then inwardly oblique, a wedge-shaped dark mark tinged with golden bronze before it at inner margin; orbicular brown defined by grey, elliptical, a brown mark above it on costa; a **V**-shaped stigma with its apex bent outwards below the cell, defined by silvery-white except at upper part of outer edge where it is defined by grey; reniform brown defined by grey, constricted at middle, a brown mark above it on costa and a brown shade before it from costa; postmedial line double, brown filled in with grey, bent outwards below costa, then oblique, slightly waved to vein 5, then slightly excurved to vein 3 and again excurved below submedian fold, some grey points beyond it on costa; subterminal line dark brown defined on outer side by grey and on inner by brown suffusion, incurved below costa, angled outwards to termen below vein 7, then incurved to tornus; two brown spots suffused with golden bronze on termen below apex. Hind wing brown, the interspaces of basal half whitish; cilia whitish with a brown line through them; the underside whitish irrorated with brown, a sinuous brown postmedial line and broad subterminal shade.

Hab. U.S.A., Florida; Mexico, Jalapa (*Godman*, *Trujillo*), 2 ♂ type; Guatemala City (*Rodriguez*), 1 ♂, 1 ♀, Godman-Salvin Coll. *Exp.* 40–42 millim.

8323. **Phytometra oxygramma.** (Plate CCXXXVII. fig. 27.)

Autographa oxygramma, Geyer, Zütrage, iv. ff. 769-70 (1832); Ottolengui, J. N.Y. Ent. Soc. x. pl. ix. f. 10; Smith, Cat. Noct. N. Am. p. 253.
Plusia indigna, Wlk. xii. 909 (1857).
Plusia parallela, Wlk. xii. 918 (1857); Druce, Biol. Centr.-Am., Het. i. p. 332.
Plusia collateralis, Herr.-Schäff. Corresp.-blatt. zool.-min. Ver. Regensb. xxii. p. 184 (1868).

Head and thorax dark brown mixed with greyish, the tegulæ with slight blackish line defined behind by whitish at middle and whitish tips, the patagia with oblique whitish line near base; tarsi blackish ringed with white; abdomen grey-brown, the crests with blackish mixed. Fore wing brown suffused with purplish grey and irrorated with blackish, the medial area with dark brown patch below the cell; subbasal line whitish defined on outer side by brown, sinuous, from costa to vein 1, a slight oblique black streak beyond it below the cell; antemedial line whitish defined on each side by brown, excurved below costa, incurved in cell, then oblique and slightly sinuous; orbicular with whitish outline and its centre defined by blackish, narrow, oblique; a very narrow elongate oblique silvery stigma below the cell, its arms defined by rufous on inner side and its inner side slightly angled inwards at submedian fold; reniform defined by blackish, narrow, and constricted at middle; postmedial line indistinctly double, dark brown filled in

with some silvery-whitish, excurved below costa, then oblique and minutely waved to submedian fold, then excurved, some whitish points beyond it on costa; subterminal line blackish with brown shades before it between veins 7 and 4 and beyond it below costa and at middle, angled outwards at veins 7, 6 and below veins 4 and 3; a fine waved black terminal line with a series of slight silvery striæ defined on inner side by brown before it except towards tornus. Hind wing brown with a cupreous gloss, the interspaces of basal half whitish; cilia brownish white; the underside white, the veins and postmedial area suffused with brown, the costal and terminal areas greyish irrorated with brown.

Hab. U.S.A., Georgia, 1 ♂, 2 ♀ type *indigna*, Missouri, Texas; Mexico, Jalapa (*Trujillo*), 3 ♂, 1 ♀, Tabasco, Teapa (*H. H. Smith*), 1 ♀; Panama, Chiriqui (*Champion*), 1 ♀, Godman-Salvin Coll.; Cuba; W. Colombia, Jiminez, 1 ♀; Venezuela (*Dyson*), 1 ♀ type *parallela*; Brazil, Rio Janeiro, 1 ♀, Tijuca (*Wagner*), 1 ♀. *Exp.* 36–42 millim.

8324. **Phytometra cebeæ.** (Plate CCXXXVII. fig. 28.)

Plusia kebeæ, Beth.-Baker, Nov. Zool. xiii. p. 270 (1906).

♂. Head and thorax reddish brown largely mixed with grey; tegulæ slightly tipped with white; abdomen whitish suffused with rufous, the crests at base darker. Fore wing grey with a silvery gloss and dark brown irroration, a triangular patch on costal half of medial area and the apical half of terminal area rather darker; subbasal line represented by two slight striæ from costa filled in with grey; antemedial line slight, double filled in with grey, angled outwards below costa, then inwardly oblique; orbicular a faint pale very oblique V-shaped mark; reniform defined on inner side by a faint pale bar, hardly defined on outer; the stigma below the cell consisting of an oblique silvery-white striga, rather dilated on inner side below and slightly defined by blackish; postmedial line slight, double filled in with grey, bent outwards below costa, then obliquely excurved to submedian fold and bent outwards to inner margin; subterminal line slightly defined by golden brown on inner side, minutely waved, excurved below vein 7 and at middle; cilia grey mixed with brown, a fine brown line near base. Hind wing whitish, the veins and terminal half suffused with brown with a silvery gloss; cilia white with a brown line through them; the underside whitish suffused and irrorated with red-brown, an indistinct diffused brown postmedial band and faint subterminal band on inner half.

♀. Abdomen grey; fore wing without the white stigma below the cell.

Hab. Dutch N. Guinea, Fak-fak (*Pratt*), 2 ♂, 1 ♀; Br. N. Guinea, Mt. Kebea (*Pratt*), type † ♂, ♀ in Coll. Bethune-Baker, Aroa R. *Exp.* 36–40 millim.

8325. **Phytometra albostriata.** (Plate CCXXXVII. fig. 29.)

Plusia albostriata, Brem. & Grey, Beitr. Schmett. N. Chin. p. 18 (1853); Men. En. Anim. Mus. Petr. pl. 16. f. 10.
Abrostola transfixa, Wlk. xv. 1783 (1858), nec xii. p. 884.
Plusia oxygramma, Hmpsn. Moths Ind. ii. p. 575.; Staud. Cat. Lep. pal. p. 239 (nec Geyer).

Head and thorax red-brown mixed with grey, the patagia greyer, the tegulæ with black medial line, the patagia with curved black line near base; frontal tuft edged with black; the spurs and tarsi ringed with white; abdomen greyish suffused with red-brown, the crests red-brown and grey. Fore wing grey suffused and striated with red-brown and irrorated with some black; subbasal line slight, brown, sinuous, from costa to vein 1; antemedial line indistinctly double, brown, waved; orbicular with whitish outline, very narrow and oblique; a very narrow and oblique wedge-shaped yellowish white stigma below the cell, its middle defined by faint rufous lines, extending to just beyond the postmedial line and emitting a streak on median nervure to before the antemedial line; reniform defined by black, narrow; postmedial line double, brown, the outer line black towards inner margin, bent outwards below costa, then oblique and minutely waved to submedian fold where it is angled inwards, then excurved, some grey points beyond it on costa; subterminal line fine, black, dentate, with slight black streaks before it below veins 6 and 5 and angled inwards at vein 2 and submedian fold; a slight waved brown shade before termen with some whitish points on its outer edge and a fine waved dark terminal line. Hind wing brown with a cupreous gloss, the interspaces of basal half whitish; cilia whitish with a brown line near base; the underside whitish irrorated with brown, a slight discoidal lunule and diffused brown postmedial and subterminal lines.

Ab. 1. Fore wing with the stigma not quite reaching the postmedial line.

Ab. 2. Fore wing with the stigma pointed at both ends and not reaching either the median nervure or postmedial line.

Hab. E. Siberia, Ussuri; Japan, Hakodaté, 1 ♀, Yokohama (*Jonas*, *Pryer*), 2 ♂, 2 ♀; Corea, Gensan (*Leech*), 1 ♂; Centr. China, Shanghai (*Pryer*), 1 ♀, Foo-chou (*Say*), 1 ♂; W. China, Chang-yang (*Pratt*), 1 ♂; Punjab, Kulu, Sultanpur (*G. Young*), 1 ♂, Dharmsála (*Hocking*), 3 ♀; Assam, Shillong (*Parish*), 1 ♂, 1 ♀; Madras, Bangalore (*Watson*), 2 ♀, Nilgiris (*Hampson*), 1 ♂, 1 ♀; Ceylon (*Templeton*), 1 ♂; Java (*Horsfield*), 1 ♀; Queensland, Brisbane (*Turner*), 1 ♂, Moreton Bay (*Diggles*), 1 ♂, 1 ♀; Fiji (*Mathew*), 1 ♂, 1 ♀. *Exp.* 32–40 millim.

8326. **Phytometra subchalybæa.** (Plate CCXXXVII. fig. 30.)

Abrostola subchalybæa, Wlk. xxxiii. 833 (1865); Hmpsn. Moths Ind. ii. p. 575.
Abrostola nubila, Moore, Lep. Ceyl. iii. p. 549 pl. 214. f. 5 (1887).

Head and thorax dark red-brown mixed with purplish grey; tegulæ with black line at middle; tarsi blackish ringed with white;

abdomen grey-brown, the crests brown and grey, the lateral tufts of male rufous. Fore wing purplish grey suffused and striated with dark brown and with a slight cupreous gloss; subbasal line slight, black, sinuous, from costa to submedian fold; antemedial line double, blackish, waved; reniform defined by black, narrow, oblique; an indistinct sinuous dark medial line, oblique to lower angle of cell, then inwardly oblique; postmedial line double, dark, filled in with whitish, bent outwards below costa, then oblique and minutely waved, acutely angled inwards at submedian fold, then excurved; subterminal line very slight, black, dentate, angled outwards at veins 7, 6 and below vein 4, and inwards at discal fold; a very fine waved black terminal line. Hind wing grey-brown, the interspaces of basal area whitish; cilia whitish with a brownish line near base; the underside whitish, the costal and terminal areas pale grey irrorated with brown, diffused brown postmedial and subterminal lines.

Ab. 1. Fore wing with narrow oblique whitish-edged stigma below vein 2 well separated from the cell.

Hab. Punjab, Deyra Dhun, 1 ♀; Madras, Nilgiris (*Hampson*), 1 ♂, 1 ♀; Ceylon, Maskelyia (*Green*), 1 ♂, Dickoya (*Green*), 1 ♂, Kandy (*Green*), 1 ♀, Pundaloya (*Green*), 1 ♂ type *nubila*; Queensland, Moreton Bay (*Diggles*), 1 ♀ type. *Exp.* 34–40 millim.

*8327. Phytometra gorilla. (Plate CCXXXVII. fig. 31.)

Plusia gorilla, Holl. Psyche, vii. p. 9 (1904).

♀. Head and thorax dark greyish brown; pectus, legs, and abdomen paler, the last with the basal crest blackish at tip. Fore wing grey-brown with a slight cupreous gloss; subbasal line faint, double, from costa to submedian fold; antemedial line faint, double, sinuous; orbicular absent; reniform faintly defined by brown; a faint sinuous medial line; postmedial line indistinct, double, slightly incurved at discal fold and below vein 3; a faint pale line just before termen with rather darker suffusion on its inner side, very slightly incurved from below apex to vein 3, then slightly waved; a fine pale line at base of cilia. Hind wing dark brown with a slight cupreous gloss; a fine pale line at base of cilia; the underside with the basal half grey suffused with brown, the terminal half fuscous.

Hab. Congo, Benito, type † ♀ in Coll. Holland. *Exp.* 30 millim.

B. Abdomen of male with expansile medial lateral tufts of long hair contained in a fold and large anal tufts.

8328. Phytometra permissa.

Plusia permissa, Wlk. xv. 1786 (1858); Hmpsn Moths Ind. ii. p. 571.

Head and tegulæ pale rufous, the latter tipped with white; thorax red-brown mixed with whitish, the patagia with oblique

whitish line across them and whitish tips; pectus and legs rufous and whitish, the tarsi ringed with whitish; abdomen ochreous suffused with red-brown, the lateral tufts of male yellowish white, the anal tuft black-brown. Fore wing whitish suffused and irrorated with red-brown and glossed with golden cupreous, especially on inner medial area and inner half of postmedial area, the medial area with a deep chocolate-brown patch below the cell; subbasal line white defined on inner side below the cell by black and with black patch beyond it, from costa to vein 1; antemedial line white defined on each side by red-brown, angled outwards below costa, strongly bent inwards in cell, oblique and sinuous below the cell; orbicular defined by white, narrow and oblique; an oblique silvery-white V-shaped stigma below the cell; reniform chocolate-brown defined by dark brown; postmedial line white defined on

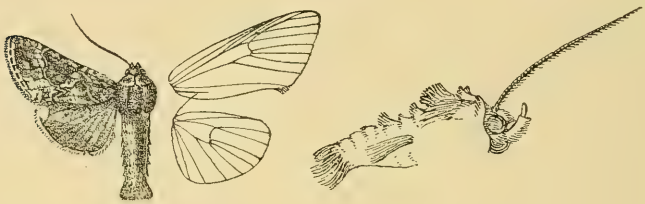


Fig. 123.—*Phytometra permissa*, ♂. ½.

each side by red-brown, bent outwards below costa, incurved at discal fold, oblique from vein 4 to submedian fold where it is angled inwards, then excurved, some white points beyond it on costa and a whitish shade from costa to vein 4; subterminal line blackish brown with a red-brown shade before it from costa to vein 4 and beyond it towards apex and at middle, excurved below vein 7 and at middle and incurved at discal and submedian folds; a terminal series of small black lunules defined on inner side by a narrow white band from apex to vein 2; cilia whitish and red-brown with a slight waved white line through them. Hind wing red-brown with a cupreous gloss; cilia white with a red-brown line through them; the underside white irrorated with red-brown, indistinct sinuous postmedial and subterminal lines with a brown band between them.

Ab. 1. Fore wing with the stigma forming a Y with a short tail.

Hab. Bombay, Kanara (*Ward*), 2 ♂ type; Madras, Nilgiris (*Lindsay*), 1 ♂, 1 ♀; Ceylon, Kandy (*Pole*), 1 ♀, Pundaloya (*Green*), 1 ♀. *Exp.* 30–36 millim.

C. Abdomen of male with expansile lateral tufts of long hair from near base and towards extremity contained in folds, the anal tuft small; hind wing with the termen strongly excurved at middle, the inner margin fringed with long hair.

*8329. Phytometra cebeana.

Polychrisia kebeana, Beth.-Baker, Nov. Zool. xiii. p. 271 (1906).

♂. Head and thorax grey-brown mixed with reddish brown; abdomen grey-brown with the lateral fringes of hair rufous. Fore wing brownish grey with slight dark irroration, the medial area suffused with golden bronze except towards costa, the postmedial area except towards costa and the terminal area except at tornus with golden and bronze suffusion; subbasal line represented by slight double oblique rufous striæ from costa and cell; a slight double antemedial line angled outwards below costa, interrupted in cell, then oblique; orbicular with slight whitish annulus, narrow,

Fig. 124.—*Phytometra cebeana*, ♂. ½.

oblique elliptical; reniform very indistinctly defined, constricted at middle; the stigma below the cell consisting of a **U**-shaped silvery spot filled in with silver and round spot beyond its lower extremity, both slightly defined by dark brown; postmedial line double, obsolescent towards costa, bent outwards below costa, then incurved, excurved between veins 4, 3, then again incurved; subterminal line defined by golden bronze on inner side, excurved below vein 7 and at middle, a narrow whitish terminal band and fine waved brown terminal line; cilia pale. Hind wing silky grey tinged with rufous except on terminal area; the underside suffused and irrorated with rufous except on terminal area and with indistinct diffused dark postmedial and subterminal bands.

Hab. Br. N. Guinea, Mt. Kebea (*Pratt*), type † ♂ in Coll. Bethune-Baker. *Exp.* 46 millim.

D. Abdomen of male with expansile medial lateral tufts of long hair contained in a fold, the anal tuft small.

8330. Phytometra acuta.

Plusia acuta, Wlk. xii. 922 (1857).

Head and thorax red-brown mixed with greyish, the tegulæ with blackish medial line, the tegulæ and patagia with whitish tips and the latter with oblique whitish line across them; pectus and hind legs brownish white; abdomen grey-brown with a reddish tinge,

the crests darker at tips, the ventral surface brownish white, the medial lateral tufts of male red-brown. Fore wing silvery-grey slightly irrorated with black and glossed with golden cupreous, the medial area with a deep chocolate-brown patch below the cell; subbasal line silvery slightly defined on each side by red-brown, waved, from costa to vein 1; antemedial line silvery defined on outer side by chocolate-brown, angled outwards below costa and inwards

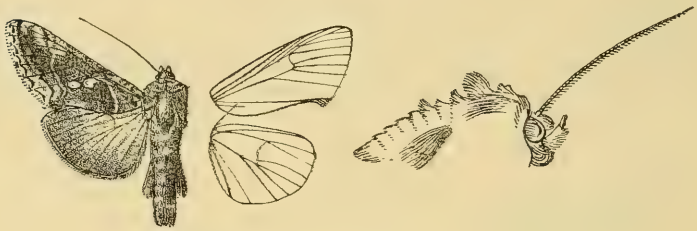


Fig. 125.—*Phytometra acuta*, ♂. ½.

in cell, then oblique and slightly sinuous; orbicular with slight pale annulus, oblique, narrow; an oblique silver U-shaped stigma below the cell with spot beyond its lower extremity, some silver between the arms of the stigma; reniform faintly defined by brown, strongly constricted at middle and with silvery striga at lower extremity; postmedial line double, chocolate-brown filled in with whitish and with silver at inner margin, bent outwards below costa, then oblique and very slightly waved to vein 5 where it is angled inwards, excurved at vein 4 and below submedian fold, some whitish points beyond it on costa; subterminal line black-brown with a chocolate shade before it from vein 7 to below 5, slightly angled outwards at vein 7, below veins 4 and 3 and above vein 1, a chocolate-brown shade beyond it from costa to vein 4, expanding into a triangular mark at vein 5; a fine waved dark terminal line and small spot at base of cilia at vein 4. Hind wing cupreous brown; cilia with a fine white line at base and white tips; the underside greyish suffused and irrorated with brown, a slight discoidal lunule, rather diffused postmedial line and subterminal shade.

Hab. S. Nigeria, Lagos (*Boag*), 1 ♀, Old Calabar (*Crompton*), 1 ♀; Ilesha (*Humfrey*), 1 ♀; Congo (*Curror*), 1 ♀ type; Abyssinia, Atbara (*Gerrard*), 1 ♂; Somaliland, Bulhar (*Drake-Brockman*), 1 ♀; Sokotra, Moukaradia (*O.-Grant*), 2 ♀; Br. E. Africa, Taveta (*Rogers*), 1 ♀, Kitwe (*Crawshay*), 1 ♀, Kikuyu (*Crawshay*), 1 ♂, Eb Urru (*Betton*), 1 ♂; Uganda, Entebbe, 1 ♀, Kampala (*Doggett*), 1 ♀, Wadelai (*Emin Pasha*), 1 ♀, Ruwenzori (*Wollaston*), 2 ♀; Germ. E. Africa, Usagara (*Neave*), 2 ♂; Br. C. Africa, Ikomba (*Grogan*), 1 ♀, Fort Mangoche (*Neave*), 1 ♂, Fort Maguire (*Neave*), 1 ♀, Chiromo (*Neave*), 1 ♂, Chinde (*de Jersey*), 1 ♂, Zomba (*Johnston*), 1 ♂,

1 ♀ ; N. Rhodesia, Serenje Distr. (*Neave*), 1 ♂, 2 ♀ ; Mashonaland, Salisbury (*Marshall*), 2 ♂, 1 ♀ ; Gazaland, Chirinda Forest (*Marshall*), 1 ♂ ; Br. Bechuanaland, Lake N'Gami (*Lugard*), 1 ♀; Rhodesia, Bulawayo (*Marshall*), 1 ♂, 1 ♀ ; Transvaal, Karino (*Cooke*), 1 ♀, Pretoria (*Distant*), 1 ♀, Johannesburg (*Ross*), 1 ♂ ; Natal, Karkloof (*Marshall*), 2 ♂, Durban (*Plant*, *Leigh*), 2 ♀ ; Basutoland, Little Caledon (*Crawshay*), 1 ♀ ; Aden (*Chevalier*), 1 ♂ ; Bombay, Kanara (*Ward*), 1 ♂ ; Java (*Horsfield*), 3 ♂. *Exp.* 38–44 millim.

E. Abdomen of male without tufts of long hair.
  a. Fore wing with the postmedial area not metallic golden.
    a^1. Fore wing without large golden patch beyond the cell.
      a^2. Fore wing with the stigma below the cell **U**-shaped with a spot beyond its lower extremity or conjoined to it to form a **Y**.
        a^3. Fore wing with the medial area below the cell suffused with gold or coppery red.
          a^4. Fore wing with the postmedial line angled inwards at discal fold where there is a silvery mark beyond it.
            a^5. Fore wing with the stigma below the cell extending into lower part of cell.
              a^6. Fore wing with the outer edge of the stigma somewhat produced above and rectangular.
                a^7. Hind wing brown ..... *festucæ*.
                b^7. Hind wing yellowish tinged with brown ..... *festata*.
              b^6. Fore wing with the outer edge of the stigma obliquely rounded ..... *putnami*.
            b^5. Fore wing with the stigma below the cell not extending into the lower part of cell.
              a^6. Fore wing with the stigma below the cell separate from the spot ..... *nichollæ*.
              b^6. Fore wing with the stigma below the cell conjoined to the spot..... ..... *contexta*.
          b^4. Fore wing with the postmedial line not angled inwards at discal fold and without silvery mark beyond it.
            a^5. Fore wing with the lower part of reniform defined by silvery-white.
              a^6. Fore wing with lower part of reniform almost entirely filled in with silvery-white ..... *bonaerensis*.
              b^6. Fore wing with the lower part of reniform defined by silvery-white except below.
                a^7. Fore wing with the antemedial line excurved below submedian fold ..... *biloba*.
                b^7. Fore wing with the antemedial line obliquely and evenly curved below the cell ..... *rhopalosema*.
            b^5. Fore wing with the lower part of reniform not defined by silvery-white or by slight points at sides only.

a^6. Fore wing with the U-shaped stigma filled in with silvery-white.
  a^7. Fore wing with the U-shaped stigma large.
    a^8. Fore wing with the postmedial line slightly waved below the angle below costa.
      a^9. Head and tegulæ not fiery red.
        a^{10}. Fore wing with the antemedial line straight and silvery from cell to inner margin ..... *confusa.*
        b^{10}. Fore wing with the antemedial line not silvery and excurved below submedian fold ..... *argyrosigna.*
      b^9. Head and tegulæ fiery red ..... *ornatissima.*
    b^8. Fore wing with the postmedial line not waved below the angle below costa ..... *agualaniata.*
  b^7. Fore wing with the U-shaped stigma minute.
    a^8. Fore wing with the postmedial line nearly straight and oblique ..... *pyropia.*
    b^8. Fore wing with the postmedial line excurved below costa, then incurved. *rutilifrons.*
    c^8. Fore wing with the postmedial line bent outwards below costa, then waved.
      a^9. Fore wing with the spot beyond the U-shaped stigma very large. *megaloba.*
      b^9. Fore wing with the spot beyond the U-shaped stigma small ..... *nigriluna.*
b^6. Fore wing with the U-shaped stigma not filled in with silvery-white.
  a^7. Fore wing with the U-shaped stigma minute.
    a^8. Fore wing with the orbicular a minute black spot with pale annulus in lower part of cell ..... *pannosa.*
    b^8. Fore wing with the orbicular with pale annulus, oblique elliptical ... *admonens.*
  b^7. Fore wing with the U-shaped stigma large.
    a^8. Fore wing with double black spot before termen above and below vein 5 ..... *geminipuncta.*
    b^8. Fore wing without double black spot before termen.
      a^9. Fore wing with the postmedial line not angled inwards at vein 2.
        a^{10}. Fore wing with the postmedial line strongly angled inwards at submedian fold ..... *dalei.*
        b^{10}. Fore wing with the postmedial line slightly angled inwards at submedian fold.
          a^{11}. Fore wing with the U-shaped stigma narrow ..... *oo.*
          b^{11}. Fore wing with the arms of the U-shaped stigma separating widely, the inner arm angled inwards on median nervure ..... *pseudochalyctes.*

c^{10}. Fore wing with the postmedial line not angled inwards at submedian fold ..... *camptosema.*

b^9. Fore wing with the postmedial line angled inwards at vein 2 ... *precationis.*

b^3. Fore wing with the medial area below the cell suffused with silver ..... *sestertia.*

c^3. Fore wing with the medial area below the cell not suffused with cupreous gold or silver.

a^4. Fore wing with the postmedial line strongly excurved below costa and slightly incurved at discal fold.

a^5. Hind wing yellow ..... *dives.*

b^5. Hind wing not yellow.

a^6. Fore wing with the antemedial line strongly angled outwards above vein 1.

a^7. Fore wing with the ground-colour purplish pink ..... *v-argenteum.*

b^7. Fore wing with the ground-colour white ..... *ornata.*

b^6. Fore wing with the antemedial line not angled outwards above vein 1 ..... *clarci.*

b^4. Fore wing with the postmedial line angled outwards below costa and inwards at vein 2.

a^5. Fore wing with the postmedial line distinctly waved from below costa to inner margin.

a^6. Fore wing with the postmedial line strongly waved, the lower part of the orbicular defined by silver, the Y-shaped stigma very irregular ..... *corusca.*

b^6. Fore wing with the postmedial line moderately waved, the orbicular a minute brown spot, the Y-shaped stigma regular ..... *labrosa.*

b^5. Fore wing with the postmedial line not distinctly waved.

a^6. Fore wing with the lower part of the orbicular defined by a U-shaped silvery mark.

a^7. Fore wing with the ground-colour purplish pink..... *bimaculata.*

b^7. Fore wing with the ground-colour golden bronze ..... *macrogamma.*

c^7. Fore wing with the ground-colour purplish grey ..... *mandarina.*

b^6. Fore wing with the lower part of the orbicular not defined by a U-shaped silvery mark.

a^7. Fore wing with the ground-colour purplish pink.

a^8. Fore wing with the subbasal line defined on inner side by slight black marks.

a^9. Fore wing with the subterminal line defined on inner side by black ..... *mappa.*

b^9. Fore wing with the subterminal line not defined on inner side by black ..... *pulchrina.*

b^8. Fore wing with the subbasal line not defined on inner side by slight black marks ..... *iota.*

b^7. Fore wing with the ground-colour grey.

a^8. Fore wing without black streak before the subterminal line in discal fold.

a^9. Fore wing with the spot placed beyond the lower extremity of the stigma below the cell ..... *nigrisigna.*

b^9. Fore wing with the spot obliquely conjoined to the stigma below the cell ..... *schalisema.*

b^8. Fore wing with black streak before the subterminal line in discal fold.

a^9. Fore wing with distinct tail to the Y-shaped stigma.

a^{10}. Fore wing with the postmedial line slightly angled inwards on vein 2 and well separated from the tail of the Y-shaped stigma.

a^{11}. Head and tegulæ tinged with red-brown; fore wing with golden bronze tones.

a^{12}. Fore wing with the tail of the Y-shaped stigma straighter and slightly lobed ..... *gamma.*

b^{12}. Fore wing with the tail of the Y-shaped stigma more upturned and strongly lobed ..... *pseudogamma.*

a^{11}. Head and tegulæ not tinged with red-brown; fore wing with hardly any bronze tones ..... *californica.*

b^{10}. Fore wing with the postmedial line angled inwards to the tail of the Y-shaped stigma ..... *flagellum.*

b^9. Fore wing with the stigma formed by a U-shaped mark with a spot beyond its extremity or conjoined to it.

a^{10}. Fore wing pale grey suffused with brown ..... *ou.*

b^{10}. Fore wing deep purple-grey suffused with chocolate-brown and bronze ..... *purpurcofusa.*

c^4. Fore wing with the postmedial line incurved below vein 4 to below end of cell.

a^5. Fore wing rufous suffused with golden bronze ..... *dudgeoni.*

b^5. Fore wing purple-grey irrorated with brown ..... *limata.*

d^4. Fore wing with the postmedial line oblique and slightly waved from below costa to submedian fold where it is angled inwards . *jessica.*

e^4. Fore wing with the postmedial line oblique and slightly sinuous from below costa to inner margin.

a^5. Hind wing grey suffused with brown ..... *bella.*
b^5. Hind wing ochreous white ..... *pasiphœia.*
c^5. Hind wing bright yellow ..... *sansoni.*
f^4. Fore wing with the postmedial line sinuous below costa and angled outwards at veins 3 and 1 ..... *exquisita.*
g^4. Fore wing with the postmedial line oblique from below costa and slightly incurved below vein 4, the **U**-shaped part of the stigma very small and narrow.
a^5. Fore wing grey strongly irrorated with brown ..... *semivitta.*
b^5. Fore wing white slightly irrorated with brown.
a^6. Fore wing with elongate dark brown spot beyond lower angle of cell ..... *purissima.*
b^6. Fore wing without elongate dark brown spot beyond lower angle of cell ..... *tetragona.*
h^4. Fore wing with the postmedial line excurved to vein 4, then oblique, the **U**-shaped part of the stigma very small ..... *anda.*
b^2. Fore wing with the stigma below the cell **U**-shaped with a spot below it ..... *orbifer.*
c^2. Fore wing with the stigma below the cell oblique conical, rounded at extremity, filled in with gold or silver, and without spot beyond or below it or conjoined to it.
a^3. Fore wing with the stigma golden.
a^4. Fore wing with gold point on inner side of reniform below ..... *parabractea.*
b^4. Fore wing without gold point on inner side of reniform below.
a^5. Fore wing with the stigma below the cell broad above ..... *bractea.*
b^5. Fore wing with the stigma below the cell narrowing above ..... *metallica.*
b^3. Fore wing with the stigma silvery.
a^4. Fore wing without chocolate-brown patch from costa before apex ..... *excelsa.*
b^4. Fore wing with chocolate-brown patch from costa before apex ..... *æmula.*
d^2. Fore wing with the stigma below the cell oblique **V**-shaped without spot beyond or below it or conjoined to it.
a^3. Fore wing with the postmedial line angled outwards below costa and inwards at vein 2.
a^4. Hind wing pure white ..... *argyrodonta.*
b^4. Hind wing ochreous, the terminal area brown ..... *v-minus.*
b^3. Fore wing with the postmedial line oblique and sinuous from below costa to inner margin ... *tancrei.*
c^3. Fore wing with the postmedial line angled outwards below costa and inwards at submedian fold.
a^4. Fore wing with the postmedial line oblique and slightly waved from below costa to its angle at submedian fold, the **V**-shaped stigma very elongate and filled in with white.
a^5. Fore wing purplish pink, the terminal area suffused with golden cupreous except at apex ..... *ochreata.*

b^5. Fore wing purplish grey, the terminal area not suffused with golden cupreous .. .. *transfixa.*

Fore wing with the postmedial line excurved from below costa to vein 4, then almost obsolete and incurved to vein 2, the U-shaped stigma not filled in with white ..... *arachnoides.*

c^4. Fore wing with the postmedial line slightly incurved at discal fold, the V-shaped stigma not filled in with white..... *aranea*

e^2. Fore wing with the stigma below the cell formed by three obliquely placed silvery spots ..... *tetrastigma.*

f^2. Fore wing with the stigma below the cell formed by two minute obliquely placed silvery spots ... *disticta.*

g^2. Fore wing with the stigma below the cell formed by a single round white spot defined by black ... *hampsoni.*

h^2. Fore wing with the stigma below the cell oblique elliptical and finely defined by white .... *emichi.*

i^2. Fore wing with the stigma below the cell round and finely defined by white.

a^3. Fore wing chestnut-red irrorated with white.

a^4. Fore wing with the inner area suffused with yellow to the postmedial line ..... *dorsiflava.*

b^4. Fore wing with the inner area not suffused with yellow ..... *maria.*

b^3. Fore wing very pale cupreous brown irrorated with white ..... *augusta.*

j^2. Fore wing with the stigma below the cell U-shaped without spot beyond or below it.

a^3. Fore wing with the postmedial line not angled outwards to below apex.

a^4. Fore wing with the postmedial line not incurved to lower angle of cell.

a^5. Fore wing with the stigma below the cell oblique.

a^6. Fore wing suffused in parts with purplish pink..... *variabilis.*

b^6. Fore wing not suffused with purplish pink.

a^7. Fore wing with the inner half of medial area not suffused with chestnut-red. . *modesta.*

b^7. Fore wing with the inner half of medial area suffused with chestnut-red.

a^8. Fore wing with the postmedial line slightly incurved below vein 4..... *uralensis.*

b^8. Fore wing with the postmedial line strongly incurved below vein 4 ... *siderifera.*

b^5. Fore wing with the stigma below the cell erect.

a^6. Fore wing with the stigma below the cell defined by brown.

a^7. Fore wing with the whole medial area suffused with rufous..... *inconspicua.*

b^7. Fore wing with the basal half of medial area and a patch before the postmedial line below costa pale..... *generosa.*

b^6. Fore wing with the stigma below the cell very faintly defined by grey..... *cashmirensis.*

c^6. Fore wing with the stigma below the cell strongly defined by white.

a^7. Fore wing with the ground-colour olive-brown.

a^8. Fore wing with pale cupreous red patch at middle of termen.
a^9. Fore wing with the postmedial line strongly incurved below vein 4 ..... *herrichi.*
b^9. Fore wing with the postmedial line slightly incurved below vein 4 ..... *renardi.*
b^8. Fore wing with deep chocolate-brown patch at middle of termen ..... *consona.*
b^7. Fore wing with the ground-colour white ..... *albavitta.*
b^4. Fore wing with the postmedial line incurved to lower angle of cell ..... *ampla.*
b^3. Fore wing with the postmedial line angled outwards to below apex ..... *deaurata.*
k^2. Fore wing with the stigma below the cell oblong, rather inwardly oblique and with dark outline... *æreoides.*
l^2. Fore wing with the stigma below the cell forming a bilobate mark slightly defined by grey-white... *masoni.*
m^2. Fore wing without stigma below the cell.
a^3. Fore wing with the postmedial line angled outwards below costa, then oblique and sinuous to inner margin.
a^4. Fore wing with the ground-colour olive-brown ..... *peponis.*
b^4. Fore wing with the ground-colour purplish pink ..... *hebetata.*
b^3. Fore wing with the postmedial line excurved below costa, at middle, and below submedian fold ..... *ærea.*
n^2. Fore wing with the stigma below the cell represented by a faint dark bar ..... *leonina.*
b^1. Fore wing with large golden patch beyond the cell . *chryson.*
b. Fore wing with the postmedial area golden.
a^1. Fore wing with the metallic areas golden-green.
a^2. Fore wing with the postmedial line bent outwards below costa, oblique to vein 7, then inwardly oblique ..... *balluca.*
b^2. Fore wing with the postmedial line obliquely excurved from costa to below vein 3, then incurved . *zosimi.*
c^2. Fore wing with the postmedial line excurved below costa, then inwardly oblique and sinuous ..... *chrysitis.*
b^1. Fore wing with the metallic areas golden without green tinge.
a^2. Fore wing with the golden area extending into middle of cell and to inner margin on postmedial and terminal areas ..... *florina.*
b^2. Fore wing with the golden area not extending into middle of cell or to inner margin on postmedial and terminal areas ..... *orichalcea.*

8331. Phytometra festucæ.

Noctua festucæ, Linn. Syst. Nat. ed. x. p. 513 (1758); Esp. Schmett. iv. pl. 113. f. 6; Hübn. Eur. Schmett., Noct. f. 277; Dup. Lép. Fr. vii. 2, p. 30, pl. 135. f. 4; Steph. Ill. Brit. Ent., Haust. iii. p. 107; Frr. Beitr. pl. 100; Staud. Cat. Lep. pal. p. 237.

Head and thorax bright rufous mixed with yellow; abdomen whitish, the crests rufous, the extremity tinged with rufous, the

ventral surface yellow tinged with rufous. Fore wing bright rufous, the basal costal area, the inner area beyond the antemedial line and the postmedial area towards tornus golden irrorated with rufous; a double rufous subbasal striga from costa; antemedial line double, red-brown, excurved below costa and inwardly oblique below the cell; a rather pear-shaped golden-silvery stigma below middle of cell and extending into the cell, defined by blackish, with a similar rather oblique golden-silvery spot beyond its lower extremity; a black point at upper angle of cell; a slight rufous medial line, very oblique from costa to beyond lower angle of cell, then very oblique inwardly and slightly sinuous; postmedial line rufous, excurved below costa, angled inwards at discal fold, excurved at vein 4, then oblique, double and sinuous towards inner margin; a golden-silvery wedge-shaped mark below vein 6 from the postmedial to the subterminal line, which is rufous, oblique and diffused to discal fold, then slighter and somewhat sinuous, defined on inner side by golden-yellow towards apex; a rufous line before termen and a terminal line; cilia with a pinkish tinge. Hind wing ochreous whitish suffused with brown; a fine dark terminal line; cilia purplish pink; the underside white irrorated with brown, the costal area, and terminal area except towards tornus tinged with rufous, a small brown discoidal spot and postmedial line excurved below costa.

Ab. 1. Fore wing with the silvery spots below the cell confluent.

Hab. Britain, Leech Coll.; France; Germany, Zeller, Frey, & Leech Colls.; Austria; Hungary; Switzerland; Spain, Catalonia, ? Castile; Balkan States; Scandinavia; Russia, Livonia, Zeller Coll.; Armenia; W. Turkestan, Tarbagatai, Issyk-Kul; W. Siberia, Altai; E. Turkestan, Ili; E. Siberia, Dahuria, Amurland. *Exp.* 38–40 millim.

Larva. Meyr. Brit. Lep. p. 157; Barrett, Lep. Brit. vi. p. 114, pl. 242. f. 1; Hoffm. Raup. p. 134, pl. 35. f. 10.

Green; dorsal line darker defined by white; subdorsal and lateral lines white; spiracular line yellow, head green. Food-plants: Grasses, *Carex*, *Typha*, *Sparganium ramosum*, *Iris pseudacorus*, and *Alisma plantago*. 5–7.

8332. **Phytometra festata.** (Plate CCXXXVII. fig. 32.)

Plusia festata, Græs. Berl. Ent. Zeit. xxxiii. p. 262 (1889); Snell. Tijd. v. Ent. xliii. Verslag, p. 46; John, Hor. Soc. Ent. Ross. xxxix. p. 253, pl. xiv. f. 24; Staud. Cat. Lep. pal. p. 237.

Head and thorax yellow tinged with rufous, the patagia except at base and the metathorax red-brown; abdomen ochreous tinged with brown. Fore wing yellowish suffused with rufous, the veins streaked with brown, the basal costal area, the inner area beyond the antemedial line, and the terminal area golden irrorated with rufous; a curved red-brown subbasal striga from costa; antemedial line double, red-brown, angled outwards below costa and at median nervure, then inwardly oblique; a rather pear-shaped golden-silvery

stigma defined by blackish in and below middle of cell, with a similar rather oblique elliptical spot beyond its lower extremity; a slight red-brown medial line oblique from costa to beyond lower angle of cell, then very oblique inwardly and slightly sinuous; postmedial line red-brown, excurved below costa, angled inwards at discal fold and outwards at vein 4, then double, oblique and sinuous; a wedge-shaped golden-silvery spot below vein 6 from the postmedial line, which is red-brown, oblique and strong to vein 5 where it is slightly angled inwards, then slighter and somewhat waved; a red-brown line before termen from apex to vein 2 and a fine terminal line. Hind wing yellowish suffused with brown, the veins browner; a slight postmedial line and subterminal shade; a fine brown terminal line; the underside yellowish white, a slight brown discoidal spot and sinuous postmedial line.

Ab. 1. Fore wing with the spot conjoined to the stigma below the cell.

Hab. W. Turkestan, Ferghana, Sarawschan; E. Siberia, Dahuria, Amurland, Ussuri; Japan, Fushiki (*Leech*), 1 ♂, Tsuruga (*Leech*), 1 ♀, Tokio (*Maries*), 1 ♀, Yokohama (*Jonas, Pryer*), 2 ♂, 2 ♀. *Exp.* 32–40 millim.

8333. **Phytometra putnami.** (Plate CCXXXVIII. fig. 1.)

Plusia putnami, Grote, Bull. Buff. Soc. Nat. Sci. i. pp. 146, 192, pl. 4. f. 2 (1873); Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 13; Smith, Cat. Noct. N. Am. p. 248; Staud. Cat. Lep. pal. p. 237.

Head, tegulæ, prothorax, and the dorsal crest in front yellow suffused with fiery red, the rest of thorax brown mixed with grey, the patagia redder brown towards tips; pectus and legs yellow suffused with fiery red; abdomen yellowish suffused with reddish brown, the ventral surface rufous. Fore wing greyish ochreous suffused and irrorated with brown, the basal costal area and inner area beyond the antemedial line yellow irrorated with fiery red; a curved subbasal red striga from costa; antemedial line double, oblique red and widely separated towards costa, brown approximated and inwardly oblique below the cell; a triangular silvery-white mark defined by blackish below the cell, its apex extending into lower part of cell, confluent or almost so with an elliptical silvery-white spot beyond its lower extremity; a black point at upper angle of cell and slight oblique brown line from beyond lower angle to inner margin; postmedial line fine, brown, excurved towards costa, incurved at discal fold, excurved at vein 4, then oblique, slightly sinuous, and double towards inner margin; a rather wedge-shaped silvery-white mark below vein 6 from postmedial to subterminal line, which is brown, oblique and rather diffused on outer side from apex to discal fold, excurved at vein 4, then slightly sinuous; a red-brown line before termen and a terminal line. Hind wing ochreous suffused with brown; a fine brown terminal line defined on inner side by ochreous except towards tornus; cilia ochreous; the underside ochreous tinged

with brown, a slight discoidal spot and rather diffused postmedial and subterminal lines.

Ab. 1. Fore wing with the upper part of the stigma forming a detached point in cell.

Ab. 2. Much more red-brown; fore wing with the golden areas much reduced, the point in cell separate from the stigma, some golden scales on discocellulars, the wedge-shaped mark before the subterminal line golden yellow; hind wing red-brown, the cilia pinkish.—Mendocino.

Hab. Canada, Hudson's Bay, Albany R., St. Martin's Falls (*Barnston*), 2 ♂, Ontario, Orillia (*Bush*), 1 ♂, Alberta, Calgary (*Wolley-Dod*), 4 ♂, 2 ♀, High R. (*Baird*), 2 ♂, Vancouver I., Cowichan Bay (*Livingston*), 2 ♂; U.S.A., Northern, Eastern, and Middle States, 4 ♂ type, Virginia, Oregon, Portland, Colorado, California, Mendocino, 1 ♂. *Exp.* 34–40 millim.

Larva. Thaxter, Papilio, iii. p. 18.

Early stages similar to *E. contexta*. Food-plants, Grasses.

8334. **Phytometra nichollæ.** (Plate CCXXXVIII. fig. 2.)

♀. Head yellow tinged with fiery red; thorax red-brown mixed with yellow; abdomen yellow suffused with red-brown. Fore wing red-brown; the costal area, the inner area beyond the antemedial line, and the terminal area except towards apex golden-yellow suffused with rufous; a curved red-brown subbasal striga from costa; antemedial line double, red-brown, excurved below costa and inwardly oblique below the cell; an oval silvery-white spot defined by blackish below middle of cell, expanding outwardly, a similar small elliptical spot beyond its lower extremity; a blackish brown point at upper angle of cell and faint oblique brown line from lower angle to inner margin; postmedial line brown, oblique to vein 6, angled inwards at discal fold and oblique from vein 5 to inner margin; a rather wedge-shaped silvery-white mark below vein 6 from the postmedial to the subterminal line, which is strong black-brown and oblique from apex to discal fold, then slighter, excurved at vein 4 and waved to inner margin, defined on inner side by whitish towards apex; a rather diffused brown line before termen and a brown terminal line; cilia yellowish, red-brown at tips. Hind wing glossy yellowish suffused with brown; cilia yellowish; the underside pale ochreous slightly tinged with red-brown, a small brown discoidal spot.

Hab. Canada, Br. Columbia, Pass D. Hope (*Mrs. Nicholl*), 1 ♀ type. *Exp.* 40 millim.

8335. **Phytometra contexta.** (Plate CCXXXVIII. fig. 3.)

Plusia contexta, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 193 (1873); Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 12; Smith, Cat. Noct. N. Am. p. 248.

♂. Head and thorax bright rufous mixed with yellow; abdomen

ochreous, the crests on basal segments rufous. Fore wing bright rufous, the basal costal area, the inner area beyond the antemedial line, and the terminal area except towards apex golden-yellow irrorated with fiery red; a curved subbasal red-brown striga from costa; antemedial line double, red-brown, excurved below costa and inwardly oblique below the cell; an elongate bilobate silvery-white mark defined by black-brown below the cell, its upper edge indented, a slight obliquely curved fiery red medial line from it to inner margin; a blackish point at upper angle of cell; a wedge-shaped silvery-white mark from beyond upper angle of cell to the subterminal line where it extends from vein 7 to 5; subterminal line strong, black-brown and oblique from apex to vein 5, then slight, red-brown, slightly incurved at submedian fold, some whitish before it towards apex; a slight red-brown line before termen and a fine brown terminal line; cilia yellowish. Hind wing yellowish white tinged with red-brown, the veins brownish; a slight red-brown subterminal shade and a fine brown terminal line except towards tornus; the underside glossy white, the veins faintly tinged with rufous.

Hab. U.S.A., Maine, New York, 3 ♂ type, Eastern and Middle States. *Exp.* 34–38 millim.

Larva. Thaxter, Papilio, iii. p. 18

Pale green, darker below; two dorsal and two subdorsal cream-coloured lines and a creamy-yellow lateral stripe; a dull yellow diffused dorsal patch on posterior part of somite 7 and anterior part of 8 sometimes obsolete, and a similar patch sometimes on somites 9, 10; head green with a few minute points and hairs. *Cocoon* slender, elongate, white, pointed at the ends. Food-plants, Grasses. 7–8.

Egg large, somewhat flattened, greenish yellow.

8336. **Phytometra bonaerensis.** (Plate CCXXXVIII. fig. 4.)

Plusia bonaërensis, Berg, Ann. Soc. Arg. xiv. p. 287 (1882).
Autographa solida, Ottolengui, J. N.Y. Ent. Soc. x. p. 64, pl. vi. f. 5 (1902); Dyar, Cat. Lep. N. Am p. 199.

Head and thorax bright rufous mixed with yellow, the tegulæ yellow towards base with a slight brownish line at middle; antennæ white in front towards base; abdomen yellowish tinged with rufous, the crests rufous at tips. Fore wing yellowish suffused with rufous with a golden gloss, the medial and postmedial area deep rufous, extending on costa to apex; a slight rufous subbasal spot below the cell; antemedial line silvery defined by red-brown, excurved below costa, then obliquely curved, a bilobate silvery mark below the cell, its upper edge indented, the basal lobe running to a point on median nervure touching the antemedial line; an elliptical silvery discoidal spot; postmedial line red-brown, bent outwards below costa, excurved to vein 5, then oblique and sinuous, slightly defined on inner side by silver towards inner margin, some pale points beyond it on costa; subterminal line obliquely excurved from apex to

vein 5, then faint and sinuous, defining the darker area; the veins of terminal area with slight dark streaks; a fine dark terminal line. Hind wing whitish tinged with rufous, especially on terminal area; cilia paler; the underside yellowish white slightly tinged with rufous.

Hab. U.S.A., Texas; Mexico; Brazil, Rio Janeiro, 1 ♂, 1 ♀, Castro Paraña (*D. Jones*), 1 ♀; Uruguay, Colon (*Oldfield Thomas*), 1 ♂; Argentina, Goya (*Perrins*), 1 ♂; Chili (*J. J. Walker*), 1 ♂. *Exp.* 32 millim.

8337. Phytometra biloba. (Plate CCXXXVIII. fig. 5.)

Plusia biloba, Steph. Ill. Brit. Ent., Haust. iii. p. 104 (1832); Guen. Noct. ii. p. 341, pl. 11. f. 10; Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 4; Smith, Cat. Noct. N. Am. p. 249.

Head and thorax red-brown; tegulæ rufous; antennæ white ringed with brown; abdomen brownish white, the crests and ventral surface rufous. Fore wing grey-brown with slight dark striæ, the basal costal area and the medial area except towards costa suffused with cupreous gold; a silvery point at base of costa and subbasal striga from costa; antemedial line silvery defined on each side by brown, angled outwards below costa, then inwardly oblique and excurved below submedian fold; a large oblique silvery bilobate mark defined by blackish below the cell, its upper edge strongly indented; reniform represented by a small black spot at upper angle of cell and a silvery streak with striæ from its extremities at lower angle; postmedial line silvery-whitish defined on each side by brown, oblique, very slightly incurved below vein 4 and submedian fold; subterminal line pale defined on inner side by red-brown suffusion, excurved below costa and towards tornus and incurved between those points; a slight whitish line before termen from apex to below vein 4, defined on inner side by red-brown towards apex and on both sides at vein 4; a fine dark terminal line. Hind wing pale cupreous red-brown, the terminal area darker; cilia whitish with a brown line near base; the underside whitish tinged with red-brown and irrorated with brown, a slight brown discoidal striga, oblique postmedial line, and subterminal shade.

Ab. 1. Fore wing with the upper edge of the silvery stigma below the cell more evenly downcurved instead of indented.—Venezuela.

Hab. N. America, 1 ♀ type, Stainton Coll.; Canada, Ottawa (*Gibson*), 1 ♀; U.S.A., Massachusetts, New York, 1 ♂, 1 ♀, Florida (*Doubleday*), 1 ♀, Missouri (*Riley*), 1 ♂, Texas, Dallas (*Boll*), 2 ♂, 1 ♀, Colorado, Berkeley (*Oslar*), 3 ♀, California (*D'Urban*), 1 ♀, New Mexico, San Ignacio (*Cockerell*), 1 ♂; Mexico, Atoyac (*Schumann*), 1 ♀, Milpas (*Forrer*), 1 ♀, Cordova (*Rümeli*), 1 ♀, Jalapa (*Trujillo*), 1 ♂, 1 ♀, Godman-Salvin Coll.; Jamaica, Cinchona (*Fawcett*), 3 ♀; Venezuela (*Dyson*), 1 ♀; Peru, Callão (*J. J. Walker*), 2 ♀; Argentina (*Oldfield-Thomas*), 1 ♀; Hawaii, Kona (*Perkins*), 1 ♂, Lanai (*Perkins*). *Exp.* 34–43 millim.

Larva. French, Papilio, ii. p. 113.

Green; dorsal line dark green; subdorsal and two lateral lines white connected by spurs with the dorsal line; stigmatal line faint greenish white with obscure black spots above it on somites 4 to 8, sometimes wanting; stigmata green defined by black; head green with black lateral stripes connected in front; antennæ black; the body covered with short pale brown hair at sides, white on dorsum.

Egg nearly globular, the base somewhat flattened, the apex bluntly conical; ridged with quadrate punctures between them each with a small elevation in centre; white with a faint creamy tinge.

8338. **Phytometra rhopalosema**, n. sp.
(Plate CCXXXVIII. fig. 6.)

Plusia gutta, Hmpsn. Moths Ind. ii. p. 571 (part.).

Head and thorax red-brown mixed with grey, the tegulæ, patagia, and metathoracic crests white at tips, the patagia with oblique white line at middle; abdomen grey suffused with brown, the crests dark brown, grey at tips. Fore wing purplish grey suffused in parts with red-brown with a cupreous gloss and irrorated with dark brown, the medial area deep red-brown below the cell with some fulvous yellow before the postmedial line; subbasal line silvery-white defined on each side by red-brown, from costa to submedian fold; antemedial line silvery-white defined on each side by red-brown, angled outwards below costa, bent inwards in cell, then oblique; an oblique brilliant silvery bilobate stigma below the cell, angled inwards on median nervure; reniform with faint greyish outline, its outer edge strongly constricted at middle and with oblique silvery streak above its lower extremity; a faint dark medial line, oblique to beyond lower angle of cell, then inwardly oblique; postmedial line double, red-brown filled in with grey and with silver towards inner margin, bent outwards below costa, oblique to vein 4, then excurved and slightly sinuous, an oblique whitish shade beyond it from costa to vein 4; subterminal line dark brown, excurved below vein 7 and angled inwards at discal fold, crossed by an oblique cupreous brown shade from apex to vein 4, some cupreous brown beyond it at middle; a fine dark terminal line defined on inner side by a whitish line from below apex to below vein 3; cilia with a slight cupreous brown spot at middle. Hind wing whitish suffused with cupreous brown, the terminal area darker; cilia white with a red-brown line near base; the underside white irrorated with brown, an oblique postmedial line and subterminal shade.

Hab. Japan, Yokohama (*Jonas*), 1 ♀, Oiwaké (*Pryer*), 1 ♂; Corea, Gensan (*Leech, Ito*), 1 ♂, 1 ♀; Centr. China, Shanghai, 1 ♂, Chusan Is. (*J. J. Walker*), 3 ♀, Chekiang (*Pryer*), 2 ♀, Kiukiang (*Pratt*), 1 ♂; W. China, Chang-yang (*Pratt*), 2 ♀, Ta-chien-lu (*Pratt*), 1 ♀; Punjab, Dharmsála (*Hocking*), 4 ♀; Assam (*Badgley*), 1 ♂; Madras, Nilgiris (*Hampson*), 1 ♂ type. *Exp.* 36–40 millim.

8339. Phytometra confusa.

Noctua circumflexa, Esp. Schmett. iv. pl. 111. ff. 5, 6 (1788); Hübn. Eur. Schmett., Noct. f. 285; Dup. Lép. Fr. vii. 2. p. 51, pl. 137. f. 4; Frr. Neue Beitr. pl. 118 (nec Linn.).
Plusia confusa, Steph. Spec. Brit. Anim. v. p. 291 (1850).
Plusia gutta, Guen. Noct. ii. p. 346 (1852); Hmpsn. Moths Ind. ii. p. 571; Staud. Cat. Lep. pal. p. 237.
Plusia bigutta, Staud. Rom. Mém. vi. p. 545 (1892).

Head and thorax rufous tinged with greyish, the tegulæ, patagia, and metathoracic crest grey at tips, the patagia with an oblique grey line across them; abdomen greyish suffused with red-brown, the crests red-brown with some grey at tips. Fore wing greyish suffused and irrorated with red-brown and with a slight golden gloss, the medial area below the cell deep rufous; subbasal line greyish, sinuous, from costa to vein 1; antemedial line greyish to median nervure, then silvery-white, angled outwards below costa, bent inwards in cell, then oblique; an oblique brilliant silver stigma below the cell angled inwards on median nervure and dilated at lower extremity; reniform with very faint pale outline, constricted at middle; postmedial line double, red-brown filled in with greyish, bent outwards below costa, then oblique and minutely waved; subterminal line indistinct, red-brown, excurved below vein 7, angled inwards at discal fold and outwards below veins 4 and 3, a wedge-shaped patch of deep rufous suffusion beyond it from apex to below vein 3; a fine red-brown terminal line defined on inner side by a whitish line from just below apex to below vein 3. Hind wing ochreous suffused with rufous with a golden gloss, the terminal area rather darker; cilia whitish with a red-brown line near base; the underside greyish ochreous irrorated with red-brown and with faint diffused postmedial and subterminal lines.

Ab. 1. Fore wing with the stigma not angled inwards but with minute silver streak before it on median nervure.

Ab. 2. *bigutta*. Fore wing with the stigma divided into two spots.

Hab. France, Leech Coll.; Germany, Zeller & Frey Colls.; Austria; Hungary; Spain; Italy, Stresa (*A. H. Jones*); Dalmatia; Balkan States; S. Russia, Sarepta, Leech Coll.; Armenia; Asia Minor, Bithynia, Lydia; Syria; Persia; W. Turkestan, Sarawschan, Ferghana, Tarbagatai Mts., Issyk-Kul; W. Siberia, Altai; E. Siberia, Dahuria, Amurland, 2 ♂; Japan, Yezo (*Pryer*), 1 ♂, Hakodaté (*Andrews*), 1 ♂, 1 ♀, Tokio (*Maries*), 1 ♂, 1 ♀, Yokohama (*Jonas, Manley*), 2 ♀; Corea, Gensan (*Leech*), 1 ♀; Kashmir, Nubra Valley, Panomik (*Avinoff*), 1 ♂; Hab. ign., 1 ♂ type, Stainton Coll. *Exp.* 32–40 millim.

Larva. Kirby, Butt. & Moths Eur. p. 270; Hffm. Raup. p. 134, pl. 35. f. 11.

Green or brownish; dorsal line black edged with white; subdorsal stripe black edged with white, waved on abdominal somites; lateral stripe white. Food-plants: *Achillea millefolium* and *Matricaria chamomilla*. 5 & 7.

8340. **Phytometra argyrosigna.** (Plate CCXXXVIII. fig. 7.)

Plusia argyrosigna, Moore, Lep. Atk. p. 149 (1882); Hmpsn. Moths Ind. ii. p. 571.

Head and thorax deep rufous slightly mixed with greyish, the tegulæ fulvous red at base; fore tarsi whitish, the mid and hind spurs and tarsi brown ringed with white; abdomen fulvous red, the crests and anal tuft deep rufous. Fore wing deep rufous suffused in parts with metallic gold especially on terminal area, the medial area with a deeper rufous patch below the cell; subbasal line represented by a slight curved fulvous red striga from costa; antemedial line very slight, silvery with a greyish shade before it, angled outwards below costa, strongly bent inwards in cell, oblique below the cell and slightly excurved above vein 1; orbicular with very faint pale outline, very narrow and oblique; an oblique rather S-shaped brilliant silvery white stigma below the cell, produced inwards to a point on median nervure and its tail somewhat dilated; reniform with very slight silvery outline, very narrow and slightly dilated at lower extremity, placed on a deep rufous patch and filled in with deep rufous; postmedial line double, deep rufous, slightly filled in with silvery-white at inner margin, bent outwards below costa, then oblique and minutely waved, angled outwards at vein 2; subterminal line red-brown, excurved below veins 7, 4, 3, a deep rufous shade before it between veins 7 and 3 and beyond it from apex to vein 2, leaving the termen paler except at apex. Hind wing rufous with a cupreous gloss, the terminal area darker; the underside with the costal area suffused with fiery red, diffused brownish postmedial and subterminal lines.

Ab. 1. Fore wing with the stigma not angled inwards on median nervure.

Hab. Kashmir, Kiris (*Leech*), 1 ♀, Rala (*McArthur*), 1 ♂, 1 ♀; Punjab, Kulu, Dugi Pass (*Thompson*), 1 ♂, 1 ♀, Dalhousie, 2 ♂ type. *Exp.* 34–48 millim.

8341. **Phytometra ornatissima.**

Plusia chalsytis, Koll. Hügel's Kaschmir, iv. p. 482 (nec Esp.).
Plusia ornatissima, Wlk. xv. 1786 (1858); Hmpsn. Moths Ind. ii. p. 572; Staud. Cat. Lep. pal. 238.
Plusia locuples, Oberth. Ét. Ent. v. p. 85, pl. 9. f. 3 (1881).

Head and thorax red-brown slightly mixed with greyish; 1st joint of palpi, extremity of 2nd joint, vertex of head, and patches on tegulæ fiery red; fore coxæ with small patches of fiery red; abdomen red-brown with a greyish tinge, the crests red-brown tipped with grey. Fore wing red-brown mixed with some greyish, and with dark brown striæ, the basal costal area, the inner area beyond the antemedial line, and the terminal area suffused with cupreous gold; a curved silvery subbasal striga from costa; antemedial line double, red-brown, filled in with silver except in cell,

angled outwards below costa, then inwardly oblique and sinuous; an oblique bilobate silvery stigma below the cell, formed by two conjoined spots, the basal spot produced to a point on median nervure towards base and with two points above it in the cell; reniform obscurely defined by red-brown, oblique; an obscure diffused red-brown medial line, angled inwards below costa and outwards on median nervure, then oblique; postmedial line double, red-brown, filled in with silver towards inner margin, bent outwards below costa, then oblique, minutely waved and excurved below submedian fold; subterminal line red-brown, oblique and diffused on inner side to vein 5, excurved below veins 4 and 3, then sinuous to tornus. Hind wing red-brown; cilia whitish at tips; the underside grey irrorated with brown, the postmedial area suffused with brown, an irregular medial line, postmedial line oblique below vein 6, and slight subterminal line.

Hab. E. Siberia, Amurland, Ussuri; Japan, Hakodaté, 1 ♂, Tokio (*Maries*), 1 ♀, Yokohama (*Pryer*), 2 ♂, 2 ♀, Morioka (*Lewis*), 1 ♂; Corea, Gensan (*Ito*), 1 ♂; W. China, Changyang (*Pratt*), 1 ♂; Punjab, Dharmsála (*Hocking*), 1 ♀; Sikhim (*Russell*), 3 ♀ type. *Exp.* 38–46 millim.

8342. Phytometra agualaniata. (Plate CCXXXVIII. fig. 8.)

Plusia agualaniata, Dogn. Hét. Nouv. Am. Sud, vi. p. 7 (1912).

♂. Head and thorax purple-grey mixed with dark red-brown; minute crimson marks below base of palpi; abdomen whitish suffused with brown, the crests dark red-brown mixed with purple-grey. Fore wing purple-grey irrorated with black, the medial area suffused with deep cupreous red-brown except towards costa and inner margin; a faint oblique whitish subbasal line from costa to vein 1; antemedial line whitish defined on each side by brown, angled outwards below costa, then inwardly oblique; a bilobate silvery-white stigma defined by black except above below the cell, formed by a triangular spot conjoined to an elliptical spot; reniform slightly defined by whitish, its upper and lower extremities with slight blackish marks in them, its inner edge oblique, its outer strongly constricted at middle; postmedial line whitish defined by brown, indistinctly double except beyond the cell, slightly angled outwards below costa, then oblique, slightly excurved to vein 3, then slightly incurved; subterminal line deep red-brown, obliquely curved and diffused on inner side to vein 4, then slight and waved; a small brown spot before termen below vein 4 and a fine dark terminal line. Hind wing whitish tinged with brown, the terminal area suffused with brown; cilia white with a brown line through them; the underside white irrorated with brown.

Hab. Peru, Agualani (*Ockenden*), 2 ♂. *Exp.* 40 millim. Type † ♂ in Coll. Dognin.

8343. Phytometra pyropia. (Plate CCXXXVIII. fig. 9.)

Plusia pyropia, Butl. A. M. N. H. (5) iv. p. 367 (1879); Hmpsn. Moths Ind. ii. p. 572.

Head and thorax rufous mixed with some grey, the vertex of head and tegulæ fiery red, the tips of tegulæ and patagia grey; pectus, legs, and abdomen pale rufous, the last with the crests deep rufous. Fore wing rufous tinged with grey and slightly striated with brown, the inner half of medial area and the postmedial area except towards tornus suffused with brilliant cupreous gold; subbasal line slight, silvery defined on inner side by brown, from costa to submedian fold; antemedial line silver, angled outwards below costa and inwards in cell, bent outwards at median nervure, then oblique; a brilliant silver stigma below the cell, consisting of an oblique elliptical spot with streak on median nervure running inwards to the antemedial line and another elliptical spot beyond its lower extremity; reniform very obscurely defined by brown; postmedial line brown with silver on it from vein 2 to inner margin, slightly excurved below costa, then oblique and sinuous below vein 2; subterminal line red-brown, excurved below vein 7 and angled outwards below veins 4 and 3; a fine brown terminal line. Hind wing pale reddish brown, the terminal half rather darker; cilia white at tips; the underside whitish tinged with rufous and irrorated with brown, a small brown discoidal spot and diffused oblique postmedial line.

Hab. Japan, Oiwaké (*Pryer*), 1 ♀, Yokohama (*Pryer*), 1 ♂, 1 ♀ type; Corea, Gensan (*Ito*), 1 ♂; Kashmir, Rajaori (*Leech*), 1 ♂; Punjab, Dharmsála (*Hocking*), 2 ♂, 3 ♀. *Exp.* 32–34 millim.

8344. Phytometra rutilifrons.

Plusia rutilifrons, Wlk. xv. 1785 (1858).
Plusia argenteo-guttata, Pouj. Bull. Soc. Ent. Fr. (6) vii. p. lxviii (1887).
Plusia adscripta, Staud. Stett. Ent. Zeit. 1888, p. 261; id. Rom. Mém. vi. p. 545, pl. 10. f. 7; id. Cat. Lep. pal. p. 238.

Head and thorax grey tinged with red-brown, the vertex of head and base of tegulæ fiery red, the metathoracic crest red-brown tipped with grey; abdomen grey-brown, the crests red-brown. Fore wing glossy grey-brown irrorated with a few black scales, the inner half of medial area and middle of terminal area bright red-brown with a golden gloss; subbasal line silvery-whitish slightly defined on each side by red-brown, from costa to submedian fold; antemedial line silvery-white slightly defined on each side by red-brown, excurved below costa, incurved in cell, bent outwards at median nervure, then oblique and sinuous; a silvery stigma below the cell consisting of a small oblique U-shaped mark with round spot beyond its extremity, both defined by blackish; reniform with slight grey annulus, the upper and lower parts of centre defined by black, its inner edge oblique and straight, its outer constricted at middle;

postmedial line silvery-white defined on inner side by red-brown, bent outwards below costa and slightly incurved below vein 5; subterminal line chocolate-brown defined on outer side by whitish towards costa and tornus, strongly angled inwards at discal fold and angled outwards at vein 4; a slight dark terminal line defined on inner side by whitish from below apex to vein 3. Hind wing grey-brown with a cupreous gloss; cilia whitish at tips; the underside whitish tinged with brown, a rather diffused brown postmedial line excurved below costa, and faint subterminal shade.

Hab. E. Siberia, Ussuri; Japan, Tokio (*Maries*), 2 ♀, Yokohama (*Jonas, Pryer*), 5 ♂, 4 ♀; N. China (*Fortune*), 1 ♀ type; Tibet. *Exp.* 30–34 millim.

8345. **Phytometra megaloba.** (Plate CCXXXVIII. fig. 10.)

Plusia megaloba, Hmpsn. J. Bomb. Nat. Hist. Soc. xxi. p. 1225 (1912).

♀. Head and tegulæ at base fiery red, the rest of thorax red-brown mixed with grey; patagia with oblique whitish line across them; pectus and hind femora and tibiæ whitish, the tarsi ringed with whitish; abdomen grey suffused with brown, the crests fiery red. Fore wing purplish grey suffused with red-brown, the medial area below the cell and the medial part of terminal area suffused with metallic fiery red; subbasal line represented by a golden striga from costa defined on each side by cupreous red; antemedial line fine, golden, inwardly oblique and almost straight; orbicular with slight golden annulus, round; a brilliant silvery-white stigma below the cell, formed by a small spot conjoined to a large rather conical spot on its outer side; reniform with slight silvery outline, its outer edge strongly indented; postmedial line red-brown slightly defined on outer side by silver, bent outwards below costa, then nearly erect and slightly sinuous, some white points beyond it on costa; subterminal line indistinct, red-brown, excurved below vein 7 and angled outwards below veins 4 and 3; cilia whitish tinged with red-brown. Hind wing purplish grey-brown with a slight reddish gloss; cilia whitish at tips.

Hab. Assam (*Badgley*), 1 ♀ type. *Exp.* 26 millim.

8346. **Phytometra nigriluna.**

Plusia nigriluna, Wlk. xii. 931 (1857); Moore, Lep. Ceyl. iii. p. 70, pl. 152. ff. 2, 2*a*; Hmpsn. Moths Ind. ii. p. 569.

Head and thorax dark brown with a cupreous gloss, the tips of tegulæ, patagia, and metathoracic crest, and an oblique line across patagia near base whitish; pectus behind whitish tinged with brown; tarsi ringed with white; abdomen whitish suffused with brown, the crests dark brown tipped with whitish. Fore wing chocolate-brown with a leaden grey gloss, the basal costal area, the medial area below the cell, and the terminal area suffused with brilliant gold; a curved subbasal silvery striga from costa; ante-

medial line slight, silvery, oblique to just above median nervure and slightly excurved below costa, inwardly oblique and slightly sinuous below the cell; a brilliant silver stigma below the cell consisting of a U-shaped spot with silvery point above its outer arm in the cell and a round spot beyond its lower extremity; reniform oblong, faintly defined by grey, with black points in its four angles and a silver point at its lower inner extremity; postmedial line double, brown filled in with greyish, strongly bent outwards below costa, then waved, incurved at submedian fold, some white points beyond it on costa; subterminal line indistinct, dark, slightly angled outwards at vein 7, then oblique to tornus; the termen with series of small black spots defined on inner side by silvery-white from apex to above vein 2, two of them conjoined to form a lunule between veins 5 and 3. Hind wing cupreous brown with some whitish at base; cilia whitish, chequered with brown to vein 2, then with brown line through them; the underside with the basal half white irrorated with red-brown, the terminal half suffused with cupreous brown, a brown discoidal striga and diffused curved postmedial line.

Hab. Sikhim; Ceylon (*Templeton*, *Green*), 1 ♂, 3 ♀ type. *Exp.* 32 millim.

Larva. Olive-green, darker below, the somites spotted with black; a few fine dorsal hairs. Food-plant, *Acalypha*.

Pupa green with dorsal segmental brown streaks.

8347. Phytometra pannosa. (Plate CCXXXVIII. fig. 11.)

Plusia pannosa, Moore, Lep. Atk. p. 149 (1882); Hmpsn. Moths Ind. ii. p. 573.

♂. Head and thorax red-brown mixed with greyish; tegulæ white at tips; patagia with oblique white line near base and white tips; tarsi ringed with whitish; abdomen whitish suffused with red-brown. Fore wing flesh colour, the basal half of costal area, the inner half of medial area and the terminal area red-brown with a cupreous gloss; subbasal line whitish, excurved below costa and ending at submedian fold; antemedial line white, angled outwards below costa, angled inwards and obsolescent in cell, then obliquely incurved; orbicular a minute black-brown spot with white annulus; an oblique silvery-white Y-shaped stigma below the cell, its tail formed by an elliptical spot; small black-brown spots at angles of cell, the lower with white annulus; postmedial line red-brown, defined on outer side by white below vein 2, slightly excurved below costa, then oblique and almost straight, some whitish points beyond it on costa, and a slight subterminal striga from costa; a pinkish white terminal line from just below apex to vein 2, where it is angled inwards, and forming a triangular mark at tornus; cilia pinkish with a fine brown line at base. Hind wing whitish suffused with red-brown, the terminal area red-brown, a slight postmedial line; cilia white with a brown line near base; the underside whitish

suffused with red-brown, a diffused brown postmedial line and a faint subterminal shade.

Hab. Sikhim, 1 ♂ type; Assam (*Badgley*), 1 ♂. *Exp.* 30 millim.

8348. **Phytometra admonens.** (Plate CCXXXVIII. fig. 12.)

Plusia admonens, Wlk. xii. 917 (1857).
Plusia intracta, Wlk. xv. 1785 (1858).

♂. Head and thorax rufous mixed with ochreous, the vertex of head with some fiery red; abdomen whitish tinged with red-brown. Fore wing ochreous suffused and irrorated with rufous, the terminal area striated with rufous, the inner half of medial area deep rufous with a cupreous gold gloss, the subterminal area with a golden gloss; subbasal line whitish defined on inner side by red-brown, from costa to submedian fold; antemedial line silvery-white defined on inner side by red-brown, excurved below costa, incurved in cell, then oblique and sinuous; an oblique Y-shaped silvery stigma below the cell, its tail dilated into an elliptical spot; reniform oblong, defined by rufous and with a silvery striga at its lower inner extremity; postmedial line double, red-brown filled in with whitish, bent outwards below costa, incurved and slightly sinuous below vein 5; subterminal line red-brown, excurved below costa, then rather obliquely incurved; the termen whitish from apex to below vein 4, defined on inner side by red-brown suffusion with a golden gloss; the veins of terminal area with slight dark streaks; a fine waved dark terminal line. Hind wing white slightly tinged with rufous; the veins rufous; a faint rufous subterminal shade except towards costa; a fine red-brown terminal line, the underside white slightly tinged with rufous, an indistinct curved red-brown postmedial line from costa to vein 2.

♀. Hind wing more strongly suffused with red-brown.

Hab. Brazil, Rio Janeiro, Tijuca (*Wagner*), 1 ♀, Petropolis (*Doer*), 1 ♂, São Paulo (*D. Jones*), 2 ♀. *Exp.* 32 millim.

8349. **Phytometra geminipuncta.** (Plate CCXXXVIII. fig. 13.)

Plusia geminipuncta, Hmpsn. Ann. S. Afr. Mus. ii. p. 347 (1902).

♂. Head and thorax red-brown mixed with some greyish; tarsi ringed with white; abdomen whitish tinged with brown, the crests and ventral surface reddish brown. Fore wing red-brown mixed with whitish and glossed with golden cupreous; subbasal line fine, silvery, from costa to vein 1; antemedial line silvery, oblique to subcostal nervure, incurved in cell, then inwardly oblique; orbicular slightly defined by silver, oblique elliptical; a silvery stigma below the cell consisting of an oblique U-shaped mark with small annulus beyond its lower extremity; reniform slightly defined by silvery-white, its inner edge straight, its outer edge constricted at middle; postmedial line double, red-brown filled in with silvery-whitish, bent

outwards below costa and slightly incurved below vein 5, some whitish points beyond it on costa; subterminal line silvery defined on inner side by red-brown, slightly excurved below costa, then oblique; a series of minute silvery points just before termen; a chocolate-brown mark at apex and a pair of chocolate-brown spots defined on outer side by silvery-white above and below vein 4; a fine pale line at base of cilia. Hind wing white, the veins and terminal area suffused with cupreous brown; cilia white with a brown line near base; the underside white irrorated with brown, indistinct sinuous brown postmedial and subterminal lines.

Hab. Transvaal, White R. (*Cooke*), 1 ♂; Natal, Mooi R., 1 ♂ type. *Exp.* 30–32 millim.

8350. **Phytometra dalei.** (Plate CCXXXVIII. fig. 14.)

Plusia dalei, Woll. A. M. N. H. (5) iii. p. 232 (1879).

Head and thorax red-brown mixed with grey-white, the tegulæ and patagia with whitish tips and the latter with whitish line across them; pectus, legs, and abdomen ochreous suffused with rufous, the last with the crests deep rufous. Fore wing pale flesh-colour irrorated with red-brown and with a cupreous golden gloss, the medial area with a deep red-brown patch below the cell; subbasal line silvery defined on each side by red-brown and with red-brown patches before and beyond it below the cell, sinuous, from costa to vein 1; antemedial line silvery defined on each side by red-brown, angled outwards below costa, strongly bent inwards in cell, then oblique and slightly angled outwards below submedian fold; orbicular with faint pale annulus, silvery below, narrow, oblique; an oblique U-shaped silvery stigma below the cell with a spot beyond its lower extremity; reniform defined by dark brown and with oblique pale line on inner edge and silvery striga at lower extremity, constricted at middle; postmedial line double, dark-brown, bent outwards below costa, then oblique and sinuous, angled inwards at submedian fold, some white points beyond it on costa; subterminal line dark brown with golden brown shades before it from costa to vein 4 and towards inner margin, angled outwards at veins 7, 6, 1 and inwards at veins 5 and 2; a slight waved dark terminal line defined on inner side by whitish with golden brown shades before it towards apex and at middle; cilia with small dark spots at base at the veins and more distinct spot at middle. Hind wing cupreous red-brown; cilia white with a brown line near base with dark striæ at the veins; the underside whitish tinged with red-brown, a rather diffused sinuous postmedial line and subterminal shade.

Hab. St. Helena (*Wollaston*), 4 ♂, 1 ♀ type. *Exp.* 40–44 millim.

8351. Phytometra oo.

Phalæna oo, Cram. Pap. Exot. iv. p. 45, pl. 311. f. E (1782), nec f. F.
Plusia rogationis, Guen. Noct. ii. p. 344 (1852); Druce, Biol. Centr.-Am., Het. i. p. 331; Ottolengui, J. N.Y. Ent. Soc. x. p. 66, pl. ix. f. 1; Smith, Cat. Noct. N. Am. p. 250.
Plusia includens, Wlk. xii. 914 (1857).
Plusia hamifera, Wlk. xii. 917 (1857).
Plusia binotula, Herr.-Schäff. Corresp.-blatt. zool.-min. Ver. Regensb. xxii. p. 184 (1868).
Plusia dyaus, Grote, Can. Ent. vii. p. 203 (1875).
Plusia pertusa, Möschl. Verh. zool.-bot. Ges. Wien, xxx. p. 390 (1880).
Plusia culta, Lintner, 2nd Report Ins. N. York, p. 99 (1885); Smith, Cat. Noct. N. Am. p. 251.

Head and thorax red-brown mixed with some grey-white, the tegulæ with slight black line at middle and whitish tips, the patagia with whitish edges and oblique whitish line near middle; abdomen grey-brown, the crests darker, the ventral surface whitish irrorated with brown. Fore wing purplish grey irrorated with red-brown and with a cupreous golden gloss, the medial area with a deep red-brown patch below the cell; subbasal line silvery defined on each side by red-brown and with red-brown patches before and beyond it below the cell, from costa to vein 1; antemedial line silvery defined on each side by red-brown, excurved below costa, angled inwards in cell, then oblique; orbicular whitish, oblique elliptical; an oblique silvery U-shaped stigma below the cell with a spot beyond its lower extremity; reniform deep red-brown with slight incomplete pale annulus with silvery striæ on its lower part, constricted at middle; postmedial line double red-brown, bent outwards below costa, incurved at discal fold, excurved at middle and angled inwards at submedian fold, some white points beyond it on costa and an oblique whitish shade from costa to vein 5; subterminal line dark brown, excurved below vein 7, angled outwards below veins 4 and 3 and incurved at vein 2, some golden brown suffusion before and beyond it from costa to below vein 4 and before it towards inner margin; a slight waved dark terminal line with a narrow whitish band before it. Hind wing cupreous brown; cilia whitish with a brown line through them; the underside whitish irrorated with brown, a slight brown discoidal striga, rather diffused postmedial line and subterminal shade.

Ab. 1. Fore wing with the U-shaped stigma conjoined to the spot.

Hab. U.S.A., Eastern States, Florida, Indian R. (*Doubleday*), 1 ♀, Texas (*Boll*), 2 ♂, 2 ♀ type *dyaus*, Colorado; Mexico, Jalapa (*Trujillo, Hoege*), 2 ♂, 4 ♀, Coatepec (*Brooks*), 1 ♂, Guerrero, Tierra Colorado (*H. H. Smith*), 1 ♀, Venta de Zopilote (*H. H. Smith*), 1 ♂, Vera Paz (*Champion*), 1 ♀; Guatemala, San Isidro (*Champion*), 1 ♂, Cerro Zunil (*Champion*), 1 ♀; Costa Rica, Candelaria Mts. (*Underwood*), 3 ♂; Panama, Chiriqui (*Champion*), 2 ♀, Godman-Salvin Coll.; Bermuda (*Nicholl*), 1 ♀; Cuba, Tanamo (*Schaus*), 1 ♂; Haiti (*Tweedie*), 2 ♀ type

includens; Antigua (*Gregory*), 1 ♀; Grenada (*H. H. Smith*), 1 ♂, 1 ♀; Barbados (*Frampton*), 1 ♂; Trinidad (*Kaye*), 2 ♀, St. Ann's (*Kaye*), 1 ♀, Caparo (*Kaye*), 1 ♀; Venezuela (*Dyson*), 3 ♀, Caracas, 1 ♀; Br. Guiana, Demerara (*Rodway*), 1 ♂, 1 ♀, Potaro R. (*Kaye*), 1 ♂, 2 ♀; Brazil, Amazons, Santarem (*Bates*), 3 ♀ type *hamifera*, Bahia (*Oldfield-Thomas*), 1 ♂, Rio Janeiro, 1 ♀, São Paulo (*D. Jones*), 2 ♀. *Exp.* 30–42 millim.

Larva. Food-plant, Cabbage.

8352. **Phytometra pseudochalcytes**, n. sp.
(Plate CCXXXVIII. fig. 15.)

♂. Head and thorax rufous, the later whitish at tips; thorax reddish brown mixed with grey, the patagia and metathoracic crest whitish at tips and the former with oblique whitish line across them; pectus behind and hind legs whitish, the tarsi ringed with whitish; abdomen whitish tinged with rufous, the crests dark brown at tips. Fore wing pale grey striated with dark brown and glossed with golden cupreous, the basal area to vein 1, the medial area below the cell, and the terminal area to vein 2 deep golden cupreous; subbasal line silvery, from costa to vein 1, with chocolate-brown marks before and beyond it below the cell and a slight silvery streak beyond it in submedian fold; antemedial line silvery defined on each side by chocolate-brown, oblique and slightly sinuous; orbicular with faint whitish annulus, narrow and oblique; an oblique Y-shaped silvery stigma below the cell, its tail dilated into a spot; reniform obscurely defined by red-brown, constricted at middle and with slight silvery striæ at its lower extremities; postmedial line double, chocolate-brown, bent outwards below costa, then oblique and slightly sinuous; excurved below submedian fold, some whitish points beyond it on costa; subterminal line dark brown, excurved below vein 7 and slightly incurved at discal and submedian folds; a fine dark terminal line defined on inner side by whitish beyond the cupreous suffusion; cilia with a slight dark spot at vein 4. Hind wing cupreous brown, the interspaces of basal half whitish; cilia white with a brown line through them; the underside white slightly irrorated with red-brown, the terminal area suffused with brown, a slight brown discoidal lunule.

Hab. N. S. Wales, Sydney (*Lyell*), 1 ♂ type. *Exp.* 40 millim.

8353. **Phytometra camptosema**, n. sp.
(Plate CCXXXVIII. fig. 16.)

♂. Head and thorax red-brown mixed with ochreous tinged with rufous; tegulæ, patagia, and metathoracic crest with some grey-white at tips; legs and abdomen ochreous tinged with rufous, the tarsi ringed with whitish, the abdominal crests red-brown and grey-white at tips. Fore wing greyish ochreous suffused with red-

brown and slightly striated with dark brown, the medial area deep red-brown below the cell with some fulvous yellow in submedian interspace before the postmedial line; subbasal line silvery-whitish defined on each side by red-brown, sinuous, from costa to vein 1; antemedial line silvery-whitish defined on each side by red-brown, indistinct to median nervure, angled outwards below costa, strongly bent inwards in cell, oblique and sinuous below the cell; orbicular with pale annulus, oblique elliptical; an oblique silvery-white Y-shaped stigma below the cell, its tail curved and rather slender; reniform with slight silvery annulus, slightly angled inwards at median nervure and its outer edge excised at middle, slight black marks in its extremities and beyond it at middle; a slight brown medial shade oblique to lower angle of cell, then inwardly oblique; postmedial line double, red-brown filled in with ochreous and with silvery-whitish below vein 2, obsolescent and bent outwards below costa, then obliquely curved to below vein 3, then slightly sinuous; subterminal line dark brown defined on inner side by red-brown suffusion, excurved below vein 7 and angled outwards below veins 4 and 3; a fine dark brown terminal line defined on inner side by a greyish line; a fine pale line at base of cilia. Hind wing ochreous suffused with rufous, the terminal area rather darker; cilia whitish with a red-brown line through them; the underside ochreous irrorated with rufous and with faint diffused postmedial and subterminal lines.

Hab. Kashmir, Deosai Plains (*Leech*), 1 ♂ type. *Exp.* 42 millim.

8354. **Phytometra precationis.** (Plate CCXXXVIII. fig. 17.)

Plusia precationis, Guen. Noct. ii. p. 344 (1852); Ottolengui, J. N.Y Ent. Soc. x. pl. ix. f. 6; Smith, Cat. Noct. N. Am. p. 251.

Head and thorax rufous mixed with red-brown and grey, the tegulæ and patagia tipped with grey and the latter with an oblique grey line across them; antennæ ringed black and white towards base; the spurs and tarsi fuscous ringed with whitish; abdomen pale rufous, the crests deep rufous at tips. Fore wing deep rufous mixed with greyish and slightly irrorated with black, the inner half of medial area and the terminal area with a golden cupreous gloss; subbasal line silvery defined on inner side by deep rufous, sinuous, from costa to vein 1; antemedial line silvery defined on each side by deep rufous, angled outwards below costa, strongly incurved in cell, then oblique and sinuous; orbicular represented by a slight silver lunule above median nervure; an oblique V-shaped silver stigma below the cell with elliptical spot beyond its lower extremity; reniform rufous with faint silvery outline, strongly constricted at middle; a faint oblique brown medial shade from costa to lower angle of cell; postmedial line double, rufous filled in with greyish, bent outwards below costa, then oblique and slightly sinuous, angled inwards at vein 2, then filled in with silver; subterminal line

indistinct, red-brown, excurved below vein 7 and angled outwards below veins 4 and 3; a fine brown terminal line defined on inner side by grey except towards tornus. Hind wing cupreous red-brown, the terminal area rather darker; cilia whitish with a brown line near base; the underside whitish irrorated with red-brown, a slight brown discoidal striga and rather diffused medial, postmedial, and subterminal lines.

Ab. 1. Fore wing with the stigma below the cell forming a Y-mark.

Hab. Canada, Ottawa (*Fletcher*), 3 ♂, Ontario, Orillia (*Bush*), 1 ♂; U.S.A., Massachusetts, Beverley (*Burg*), 2 ♀, New York (*Doubleday, Packard, Riley*), 7 ♂, 6 ♀ type, Trenton Falls (*Doubleday*), 1 ♂, 1 ♀, Pennsylvania, New Brighton (*Merrick*), 1 ♀, Illinois, Chicago (*Schleiter*), 1 ♂. *Exp.* 36–42 millim.

Larva. Packard, Guide to the Study of Insects, p. 312.

Green; dorsal and subdorsal lines whitish; lateral stripe whitish, more distinct; head with lateral black stripes. Food-plant, Hollyhock. 7–8.

8355. Phytometra sestertia.

Plusia sestertia, Feld. Reis. Nov. pl. 110. f. 31 (1874).
Plusia mapongua, Holl. Psyche, vii. p. 8 (1894).

♀. Head and thorax silvery-white mixed with deep chocolate-brown, the tegulæ except at tips pale rufous; palpi and sides of frons black-brown, the former with some ochreous at extremity of 2nd joint and in front of 3rd joint; pectus and legs black-brown mixed with white, the fore tibiæ ochreous white in front, the tarsi ringed with white; abdomen brownish grey, the basal crest pale rufous. Fore wing brilliant silver sparsely irrorated with black-brown and tinged in parts with pale rufous, the costal area thickly irrorated with black-brown, a large deep chocolate-brown patch on medial area below the cell and beyond its lower angle, the area before the subterminal line suffused with deep chocolate-brown except at middle; a subbasal silvery striga from costa defined on outer side by black-brown; antemedial line silver defined on each side by black-brown, excurved below costa and at vein 1; a brilliant silvery stigma below the cell consisting of a large oblique U-shaped mark with silvery point above its outer extremity in the cell, and a rather diamond-shaped mark beyond its lower extremity, sometimes touching it; reniform elliptical, defined by deep chocolate-brown and with a minute silver point at its lower inner extremity; postmedial line double, black-brown, indistinct and filled in with white towards costa, then filled in with silver, reduced to points between veins 4 and 2, bent outwards below costa, incurved at discal fold, incurved below 4 and slightly excurved at vein 1, some small white spots beyond it on costa; subterminal line silvery defined on inner side by deep chocolate-brown except at middle, slightly angled outwards at veins 7, 6, then bent inwards, then

slightly waved to tornus; the apex with some chocolate-brown suffusion and two minute black spots defined on inner side by silvery-white on termen; cilia with a series of black points at base and chequered with black-brown at veins 4, 3, 2 and tornus. Hind wing dark cupreous brown with some whitish on basal half; cilia whitish with a brown line near base and chequered with brown at apex and middle; the underside whitish irrorated with brown, the terminal area suffused with brown, a brown discoidal striga and diffused postmedial and subterminal lines.

Hab. Gaboon, Ogové R., type † *mapongua* in Coll. Holland; Br. E. Africa, Mombasa (*de la Garde*), 1 ♀; Uganda, Ruwenzori (*Wollaston*), 1 ♀; Natal, Karkloof (*Marshall*), 1 ♀; Cape Colony, Kokstad (*Mrs. Pringle*), 1 ♀, Knysna, type † ♀ in Coll. Rothschild. *Exp.* 30–32 millim.

8356. Phytometra dives.

Plusia dives, Ev. Bull. Mosc. 1844, iii. p. 596 & 1857, i. p. 125; Herr.-Schäff. Eur. Schmett., Noct. f. 511; Staud. Cat. Lep. pal. p. 237.

Head and thorax bright rufous mixed with some greyish; tegulæ with a grey line at middle and grey tips; patagia with an oblique grey line at middle; pectus and legs brownish white, the tibiæ and tarsi tinged with rufous; abdomen dorsally pale rufous with some yellow at base, the crests deep rufous, the ventral surface white. Fore wing pink almost entirely suffused with rufous except on costal and terminal areas; a curved dark subbasal striga from costa defined on outer side by silvery-gold, and an oblique striga from median nervure defined on inner side by silvery-gold; antemedial line double, dark, angled outwards and filled in with silvery-gold below costa, angled inwards on median nervure, then oblique sinuous and filled in with silvery-gold and produced to a dentate mark above vein 1; orbicular a small round silvery-gold spot in lower part of cell, conjoined to a V-shaped stigma below the cell filled in with silvery-gold and with a round silvery-gold spot well beyond its lower extremity; reniform with its lower part defined by an oblique silvery-gold striga on inner side and a >-shaped mark on outer, otherwise undefined; an oblique brown striga from middle of costa and slight oblique line from vein 4 well beyond the cell to inner margin; postmedial line brown, double towards costa and below vein 4 and filled in with silvery-gold towards inner margin, bent outwards below costa, oblique to vein 7, slightly incurved at discal fold and oblique below vein 4; subterminal line represented by wedge-shaped black marks between veins 8 and 5 and an oblique line from vein 4 to inner margin, some rufous beyond it towards apex and at middle; a black-brown terminal line; cilia pink at base, with pale line at middle and rufous tips. Hind wing orange-yellow, some brown at base; a black-brown terminal band, its inner edge indented at submedian fold; cilia orange-yellow with a red-brown line at base. Underside of fore wing orange-yellow suffused and irrorated with fuscous brown except on costal and

terminal areas; hind wing without brown at base and the terminal band obsolescent.

Hab. W. Siberia, Altai; Tibet, Amdo; Mongolia, Urga; E. Siberia, Dahuria, Kentei, 1 ♂, 1 ♀, Amurland; Kamtschatka. *Exp.* 34 millim.

8357. Phytometra v-argenteum.

Noctua v-argenteum, Esp. Schmett. iv. pl. 188. f. 3 (1795); Staud. Cat. Lep. pal. p. 237.

Noctua mya, Hübn. Eur. Schmett., Noct. f. 275 (1802); Dup. Lép. Fr. vii. 2. p. 33, pl. 135. f. 3; Frr. Beitr. iii. p. 40, pl. 107. f. 1; Herr.-Schäff. Eur. Schmett., Noct. f. 205.

Head and thorax bright rufous, some of the scales tipped with whitish; palpi darker brown with whitish lines in front and behind; antennæ with white ring at extremity of basal joint, the shaft whitish in front; tegulæ with white lines at middle and tips with darker brown between them; patagia with oblique white bar and bar at middle defining a triangular dark patch; pectus and legs whitish tinged with rufous; abdomen whitish tinged with red-brown, the crests bright rufous. Fore wing pink suffused in parts with red-brown, especially on discal area; an oblique black streak from base of costa; subbasal line double, the inner line black, the outer red-brown, filled in with yellow and defined on outer side by yellow, sinuous, from costa to submedian fold where there is a slight yellow streak beyond it defined above and below by blackish; a slight black streak on inner margin before the antemedial line, which is double, the inner line red-brown, the outer blackish, angled outwards below costa, inwards at median nervure and outwards just above and below vein 1; orbicular represented by a small U-shaped silvery mark defined by blackish and with two yellow points above it; a larger similar U-shaped mark below it with an elliptical spot beyond its lower part; reniform faintly defined by yellowish and its lower part by three silvery points, its upper part very narrow and oblique; an oblique brown bar from costa to the reniform, an oblique black streak beyond upper extremity of reniform, then an oblique sinuous brown line to inner margin; postmedial line double, red-brown, strongly excurved below costa, then oblique and sinuous to inner margin, the inner line with some black on it, defined on outer side by a yellowish line which is well separated at costa; subterminal line yellow defined on inner side by black, excurved below vein 7 and waved below vein 5; a yellow line before termen; cilia pink at base, rufous at tips. Hind wing whitish suffused with red-brown with a faint golden gloss; cilia rufous; the underside white tinged with brown, a slight dark discoidal lunule, oblique rather diffused medial and postmedial lines, a faint subterminal shade.

Hab. Austria, Tirol, Carniola; Switzerland, Valais, Zeller, Frey, & Leech Colls., Zermatt *(A. H. Jones)*; Italy, Piedmont, Leech Coll. *Exp.* 36–42 millim.

Larva. Kirby, Butt. & Moths Eur. p. 268; Hffm. Raup. p. 134.

Dull green with yellowish lines. Food-plants: *Isopyrum thalictroides* and flowers of *Thalictrum fœtidum*. 6.

8358. Phytometra ornata.

Plusia ornata, Brem. Lep. Ost-Sib. p. 103, pl. 8. f. 15 (1864); Staud. Cat. Lep. pal. p. 237.

♂. Head and thorax white mixed with some brown; the patagia near tips and metathorax with oblique brown bars; tarsi brownish ringed with white; abdomen white slightly irrorated with brown, the crests darker. Fore wing white suffused in parts with brown with a slight bronze tinge; subbasal line represented by oblique blackish striæ from costa and cell defined on outer side by white; antemedial line blackish defined on inner side by white, strongly angled outwards below costa and above vein 1, incurved between those points and retracted to inner margin; orbicular a silvery-white U-shaped mark with point above it, both defined by blackish; reniform represented by a curved silvery-white striga with dark streak above its upper extremity which is much produced, its lower part defined by silvery-white points on inner and outer sides; a V-shaped silvery-white mark below orbicular with elliptical spot beyond its lower extremity, both defined by blackish; postmedial line double, blackish filled in with white and defined on outer side by white, very strongly bent outwards below costa, excurved to below vein 7, then oblique, sinuous; subterminal line closely approximated to the postmedial line, blackish defined on outer side by white towards costa, incurved at vein 5 and angled outwards above and below vein 3; a fine dark terminal line defined on inner side by white produced inwards as short streaks on veins 5, 3, 2. Hind wing white tinged with brown especially on terminal area; a brown terminal line.

Hab. W. Siberia, Altai; Mongolia, Urga, 1 ♂; Tibet, Amdo; E. Siberia, Dahuria, Amurland. *Exp.* 38 millim.

8359. Phytometra clarci. (Plate CCXXXVIII. fig. 18.)

Plusia clarci, Hmpsn. A. M. N. H. (8) v. p. 432 (1910).

♀. Head, thorax, and abdomen reddish brown mixed with grey-white; tegulæ with slight white line near base and white tips. Fore wing pale grey largely suffused with cupreous brown especially at middle of medial area and beyond the postmedial line, and sparsely irrorated with dark brown; subbasal line silvery-white, straight, from costa to vein 1; a patch of cupreous brown suffusion beyond it; antemedial line represented by an oblique silvery-white striga from costa and obliquely curved line from cell to inner margin defined on each side slightly by dark brown; a small silver U-shaped stigma filled in with grey below the cell towards extremity with a small rather triangular silver spot obliquely placed below it; reniform represented by an indistinct brown bar on its inner edge and some slight spots on its outer, an oblique brown shade to it from costa; postmedial line double, grey-white filled in with brown, the outer line with silvery outer edge, bent outwards below costa, then oblique, incurved at discal fold, then slightly sinuous; a silvery-white subterminal line from above vein 2 to tornus; a grey-white

line just before termen from costa to vein 3, double towards costa; a terminal series of slight dark brown lunules and striæ; cilia brownish at base, grey-white at tips. Hind wing whitish tinged with brown, the terminal area broadly fuscous brown with a cupreous tinge; cilia white with a brown line near base; the underside white thickly irrorated with brown, oblique brown medial and postmedial rather indistinct lines, and a broad diffused subterminal shade.

Hab. Natal, Durban (*E. L. Clark*), 2 ♀ type. *Exp.* 38 millim.

8360. **Phytometra corusca.** (Plate CCXXXVIII. fig. 19.)

Plusia corusca, Streck. Proc. Ac. Nat. Sci. Phil. 1885, p. 178; Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 15; Smith, Cat. Noct. N. Am. p. 257.

Head and thorax rufous, the tips of tegulæ and patagia, an oblique line across middle of latter and the tips of scales of metathoracic crest grey-white; antennæ ringed with white towards base; pectus and legs ochreous tinged with rufous; abdomen brownish ochreous, the crests brown and grey at tips. Fore wing purple-grey tinged with brown, the medial area below the cell purple-brown; subbasal line silvery-white, defined on each side by black towards costa and on inner side below the cell; antemedial line silvery-white defined on outer side by black except in cell, on inner side also towards inner margin and on outer side by brown towards costa, strongly bent inwards in cell, then waved and more strongly excurved above vein 1; orbicular defined by black and by silvery-white below, small, round; an irregular silvery-white Y-shaped stigma defined by black below the cell, its tail angled outwards and dilated into a spot; reniform with slight incomplete silvery-white annulus defined by blackish, strongly constricted at middle where there is a black spot on its outer edge, its lower part with a black spot in it; a small blackish-brown spot at middle of costa; postmedial line with small blackish-brown spot at costa, then obsolescent and brownish to vein 4, bent outwards below costa, then minutely waved, below vein 4 silvery-white defined on each side by black marks, waved, angled inwards at vein 2 and submedian fold, a blackish-brown mark beyond it on costa; subterminal line whitish defined on inner side by blackish with golden-brown suffusion before it, excurved at vein 7, angled inwards at discal fold and outwards below veins 4 and 3, angled inwards at vein 2 and ending at tornus; the terminal area with some golden-brown suffusion at apex and middle; cilia chequered blackish brown and white. Hind wing ochreous suffused with cupreous brown; a brownish subterminal shade; cilia white chequered with golden brown; the underside ochreous tinged with rufous, a faint brownish subterminal shade.

Hab. Canada, Vancouver I., 1 ♀; U.S.A., Washington, 1 ♂, Colorado. *Exp.* 38–42 millim.

8361. **Phytometra labrosa.** (Plate CCXXXVIII. fig. 20.)

Plusia labrosa, Grote, Proc. Ac. Nat. Sci. Phil. 1874, p. 207; Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 14; Smith, Cat. Noct. N. Am. p. 251.

♀. Head and thorax bright red-brown, the tegulæ and thoracic crest tipped with grey; antennæ whitish ringed with brown; pectus and legs pale red-brown, the tibiæ at extremities and tarsi ringed with white; abdomen whitish suffused with red-brown, the crests red-brown tipped with grey. Fore wing purple-grey tinged with red-brown, the medial area below the cell deep red-brown; subbasal line silvery-white defined on each side by red-brown, sinuous, from costa to submedian fold, a red-brown shade beyond it; antemedial line silvery-white defined on each side by red-brown, angled outwards below costa, bent inwards in cell, then oblique and excurved above vein 1; orbicular a small red-brown spot; an oblique silvery Y-shaped stigma below the cell, its tail bent outwards and dilated at extremity; reniform with slight silvery-white annulus, constricted at middle where there is a brown spot beyond it, its lower part filled in with brown; postmedial line silvery-white defined by red-brown, bent outwards below costa, then oblique and waved, obsolescent beyond the cell, some white points beyond it on costa; subterminal line silvery-white defined on inner side by deep red-brown suffusion, angled outwards at vein 7 and below veins 4 and 3 and inwards at discal fold and vein 2, a red-brown shade beyond it at apex and a trifid shade at middle; cilia chequered purple-grey and brown with a fine white line at base. Hind wing whitish suffused with red-brown, the terminal area red-brown; cilia chequered white and brown; the underside ochreous white, the costal and terminal areas suffused with brown, a slight brown discoidal striga.

Hab. U.S.A., California, Sanzalito, 1 ♀ type. *Exp.* 44 millim.

8362. **Phytometra bimaculata.** (Plate CCXXXVIII. fig. 21.)

Plusia bimaculata, Steph. Ill. Brit. Ent., Haust. iii. p. 102 (1832); Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 5; Smith, Cat. Noct. N. Am. p. 249.

Plusia u-brevis, Guen. Noct. ii. p. 341 (1852).

Head rufous mixed with some brown; tegulæ rufous at base, red-brown at tips; thorax red-brown with the crest rufous in front; antennæ whitish tinged with rufous and ringed with black towards base; palpi with the 3rd joint brown; pectus and legs red-brown, the tarsi brown ringed with white; abdomen grey-brown with a reddish tinge, the crests red-brown mixed with blackish, the ventral surface rufous. Fore wing pale greyish rufous slightly irrorated and striated with black, the medial area with a patch of deep rufous below the cell, the medial part of subterminal area with a golden gloss; a golden subbasal striga from costa defined on each side by brown and a minute black spot below the cell; antemedial line golden defined on each side by black-brown, angled

outwards below costa, strongly bent inwards in cell, angled outwards at median nervure and excurved above vein 1; orbicular represented by a slight curved golden-silvery mark below confluent with the brilliant golden-silvery rather oblique stigma below the cell with a small wedge-shaped rufous mark in its upper part which is defined by a golden-silver streak above, its inner edge concave towards base, an elliptical golden-silvery spot beyond its lower extremity; reniform defined by diffused brown with golden-silvery striæ on inner and outer sides of lower part and slight black marks in upper and lower extremities, constricted at middle; a diffused brown medial line, oblique to lower angle of cell, then inwardly oblique and incurved at submedian fold where there is some rufous beyond it; postmedial line double, rather diffused, brown to vein 3, then blackish filled in with gold, bent outwards below costa, then oblique, bent outwards below vein 2 and very slightly angled inwards at submedian fold; subterminal line blackish, an oblique brown shade from apex to the line at vein 7, then defining its inner side, excurved below vein 7 and angled outwards below veins 4 and 3; cilia blackish at tips on apical half. Hind wing ochreous suffused with cupreous red-brown, the veins and terminal area darker brown; a slight oblique brown postmedial line; cilia pale rufous; the underside ochreous tinged with rufous and irrorated with brown, a slight blackish discoidal lunule, rather diffused postmedial line excurved below costa, a subterminal shade except towards costa.

Ab. 1. Fore wing with the stigma forming a Y-mark.

Ab. 2. *u-brevis*. Fore wing with the stigma pure silver.

Hab. CANADA, Renfrew Co., 1 ♂, Nova Scotia (*Redman*), 1 ♀, Anticosti I., 1 ♂, Alberta, Calgary (*Wolley-Dod*), 3 ♂, 3 ♀, High R. (*Baird*), 1 ♀; U.S.A., New York (*Doubleday, Grote*), 1 ♂, 2 ♀ type *u-brevis*, New Jersey, New Mexico, Beulah (*Cockerell*), 2 ♀; HAB. IGN., 1 ♀ type, Stainton Coll. *Exp.* 40–48 millim.

8363. Phytometra macrogamma.

Plusia macrogamma, Ev. Bull. Mosc. 1842, iii. p. 554 & 1857, i. p. 120; Herr.-Schäff. Eur. Schmett., Noct. f. 266; Staud. Cat. Lep. pal. p. 238.
Noctua sevastina, Frr. Neue Beitr. pl. 455. f. 5 (1845).

Head and tegulæ pale rufous, the latter tipped with whitish; antennæ whitish; thorax rufous mixed with greyish; pectus, legs, and abdomen ochreous tinged with rufous, the last with the crests rufous. Fore wing greyish with a golden gloss, the medial area except at costa golden-rufous; a minute black streak defined above by silver above base of subcostal nervure and a black striga defined on outer side by silver below the cell; two subbasal silvery striæ from costa; antemedial line silver defined on each side by rufous, excurved below costa, incurved in cell and excurved above vein 1; orbicular represented by a slight silver lunule above median nervure conjoined to an oblique brilliant silver Y-shaped stigma below the cell, its arms filled in by a small black mark and its tail dilated

into an elliptical spot; reniform slightly defined by silver, strongly constricted at middle and with slight black marks in its extremities; a faint brownish medial shade, oblique below the cell; postmedial line double, rufous filled in with greyish, bent outwards below costa, then oblique, at vein 2 slightly bent outwards then somewhat sinuous and filled in with silver; subterminal line greyish defined on inner side by golden-brown suffusion, excurved at vein 7 and slightly angled outwards below veins 3 and 2; a slight rufous shade before termen from apex to vein 3 and a fine terminal dark line; cilia with slight brown spots at the veins from apex to vein 3. Hind wing ochreous tinged with golden-brown, the terminal area rather browner; a faint brownish postmedial line; cilia whitish tinged with rufous and intersected with rufous from apex to vein 3; the underside ochreous tinged with rufous, a fine brown postmedial line excurved below costa, and subterminal shade.

Hab. LAPLAND, Leech Coll.; FINLAND; RUSSIA, Urals; W. SIBERIA, Altai; MONGOLIA, Urga; E. SIBERIA, Dahuria, Amurland. *Exp.* 42 millim.

8364. Phytometra mandarina.

Noctua mandarina, Frr. Neue Beitr. v. p. 164, pl. 479. f. 4 (Jan. 1846); Staud. Cat. Lep. pal. p. 238.
Plusia interscalaris, Herr.-Schäff. Eur. Schmett., Noct. f. 510 (1850).
Plusia typinota, Butl. A. M. N. H. (5) i. p. 201 (1878); id. Ill. Het. B.M. ii. p. 34, pl. 31. f. 10.
Plusia obscura, Oberth. Ét. Ent. x. p. 27, pl. 3. f. 13 (1884).

Head and thorax bright rufous, the tegulæ, patagia, and metathoracic crest tipped with whitish and the patagia with oblique whitish line at middle; antennæ whitish; tarsi ringed with whitish; abdomen rufous. Fore wing bright rufous mixed with purplish grey and striated with red-brown; subbasal line silver defined on each side by rufous, sinuous, from costa to vein 1; antemedial line silver defined on each side by rufous, angled outwards below costa, strongly excurved in cell, then oblique and sinuous; orbicular defined by silver, oblique and somewhat quadrate, conjoined to an oblique silver stigma below the cell, its tail dilated into an elliptical spot; reniform defined by silver and with slight black marks in its extremities, its inner edge oblique, its outer edge strongly constricted at middle; a slight red-brown medial shade, oblique to lower angle of cell, then inwardly oblique and angled inwards at submedian fold; postmedial line double, rufous filled in with silver, bent outwards below costa, then oblique and slightly sinuous, angled inwards at vein 2; subterminal line brown with rufous suffusion before it, excurved below vein 7 and angled outwards below veins 4 and 3; a fine dark terminal line with a silvery line before it from apex to vein 2 defined on inner side by rufous suffusion. Hind wing whitish tinged with rufous, the terminal area suffused with rufous; a faint postmedial line; cilia white with a series of rufous striæ from apex to vein 2; the under-

side white irrorated with rufous, a slight rufous discoidal spot, rather diffused medial and postmedial lines, and a subterminal shade.

Ab. 1. *obscura*. Fore wing much darker.

Hab. Russia, Urals, Zeller Coll.; W. Siberia, Altai, 2 ♀; E. Siberia, Amurland, 1 ♀, Ussuri; Kamtschatka; Japan, Yokohama (*Jonas*), 1 ♀ type *typinota*. *Exp.* 40–44 millim.

8365. **Phytometra mappa.** (Plate CCXXXVIII. fig. 22.)

Plusia mappa, Grote & Rob. Trans. Am. Ent. Soc. ii. p. 204 (1868); Ottolengui, J. N.Y. Ent. Soc. x. pl. viii. f. 1; Smith, Cat. Noct. N. Am. p. 249.

♀. Head and thorax bright rufous mixed with yellowish; abdomen ochreous white tinged with red-brown, the crests rufous, the ventral surface suffused with rufous. Fore wing yellowish suffused with bright rufous and irrorated with a few black scales; subbasal line represented by two curved rufous striæ from costa filled in with yellow and defined on outer side by yellow, a black point defined above by yellow before it on subcostal nervure and a minute black spot defined on outer side by yellow below the cell; antemedial line double, rufous filled in with yellow, incurved in cell and bent inwards to inner margin; orbicular slightly defined by whitish, narrow, oblique elliptical, open above; a small silvery **V**-shaped stigma, defined by blackish below it with an elliptical silvery spot well beyond its lower extremity; reniform slightly defined by yellow with black before its outer edge, strongly constricted at middle; medial line brown, rather diffused, angled inwards in cell and outwards to lower angle, then oblique and sinuous; postmedial line double, red-brown filled in with yellow, bent outwards below costa, then oblique, slightly angled inwards at vein 2, then waved, some yellowish points beyond it on costa; subterminal line yellowish defined on inner side by red-brown and by black on costal half, excurved below vein 7 and at middle and angled inwards at submedian fold; a red-brown terminal line defined on inner side by yellow; cilia yellowish with a slight brown line near base. Hind wing ochreous white tinged with red-brown, the terminal area suffused with darker brown; a faint sinuous brown postmedial line defined on outer side by ochreous white; a slight ochreous white line before termen; cilia ochreous with a slight brownish line near base; the underside ochreous white tinged with red-brown, a slight brown discoidal striga, rather diffused postmedial line, and subterminal shade.

Hab. Canada, Anticosti I., 1 ♀, Ontario, Orillia (*Bush*), 1 ♀; U.S.A., N. States, New Hampshire, White Mts. (*Dimmock*), 1 ♀, Mt. Washington. *Exp.* 40 millim.

8366. **Phytometra pulchrina.**

Noctua iota, Hübn. Eur. Schmett., Noct. f. 282 (1802); Frr. Beitr. pl. 94 (1829); Dup. Lép. Fr. vii. 2. p. 38, pl. 136. f. 2 (nec Linn.).
Noctua pulchrina, Haw. Prod. Lep. Brit. p. 16 (1802) non descr.; id. Lep. Brit. p. 256 (1809); Staud. Cat. Lep. pal. p. 238.
Plusia v-aureum, Guen. Noct. ii. p. 339 (1852).
Plusia gammoides, Speyer, Stett. Ent. Zeit. xxxvi. p. 103 (1875).
Plusia percontatrix, Auriv. Nord. Fjär. p. 181 (1888).
Plusia burætica, Staud. Iris, v. p. 370 (1892).

Head and thorax bright rufous; tegulæ with whitish tips; patagia with oblique whitish line at middle and whitish tips, the scales of metathoracic crests tipped with whitish; tarsi ringed with white; abdomen red-brown with a greyish tinge, the crests rufous and whitish at tips. Fore wing rufous mixed with pinkish and slightly irrorated with blackish, the medial area below the cell and the terminal area except towards tornus bright rufous; a subbasal silvery striga from costa defined on each side by bright rufous and a silvery striga from cell with a black striga on its inner side; antemedial line silvery defined on each side by bright rufous, strongly bent inwards in cell and obliquely curved below the cell; orbicular rufous with ochreous annulus except below where it is defined by silver, oblique elliptical; a brilliant silver V-shaped stigma below the cell with elliptical spot beyond its lower extremity; reniform defined by silver and its centre by brown, and with small black spots in its extremities, its inner side oblique, its outer strongly constricted at middle where there is some bright rufous beyond it; a rufous medial shade, oblique to lower angle of cell, then inwardly oblique, postmedial line defined on each side by rufous, pinkish to vein 2, then silvery-white, bent outwards below costa, then oblique and sinuous, some pink points beyond it on costa; subterminal line blackish and rather diffused on inner side except towards costa and inner margin where it is red-brown defined on outer side by pink, excurved at vein 7 and angled outwards below veins 4 and 3; a pink line before termen. Hind wing ochreous suffused with red-brown with a golden gloss, the terminal area red-brown; cilia white with slight brown spots near base to vein 2, then a line; the underside whitish irrorated with brown, the costal area tinged with rufous, an oblique brown striga on upper discocellular and diffused medial, postmedial, and subterminal lines.

Ab. 1. *percontatrix*. Fore wing with the stigma below the cell forming a Y-mark.

Ab. 2. *gammoides*. Fore wing more brown and violaceous grey and with less rufous.

Ab. 3. *burætica*. Similar to ab. 2 but fore wing with the stigma Y-shaped.—E. Siberia.

Hab. Britain, Leech Coll., Sligo (*Salvage*); France; Germany, Zeller, Frey, & Leech Colls.; Austria; Hungary; Switzerland, Frey Coll.; Scandinavia; Russia, Livonia, Zeller

Coll., St. Petersburg, Zeller Coll.; W. Turkestan, Tarbagatai Mts.; W. Siberia, Altai; E. Siberia, Amurland, 1 ♂, Kentei, 1 ♀. *Exp.* 40–44 millim.

Larva. Meyr. Brit. Lep. p. 158; Barrett, Lep. Brit. vi. p. 118, pl. 242. f. 2.

Pale green; dorsal line darker edged with white; subdorsal and lateral lines white; spiracular line yellowish; dots whitish; head pale green. Food-plants, *Lamium*, *Urtica*, *Lonicera*, etc. 8–5.

8367. Phytometra iota.

Noctua iota, Linn. Syst. Nat. ed. x. p. 513 (1758); Esp. Schmett. iv. pl. 113. f. 3; Dup. Lép. Fr. vii. 2. p. 38, pl. 136. f. 3; Herr.-Schäff. Eur. Schmett., Noct. f. 265; Staud. Cat. Lep. pal. p. 238.
Noctua protea, Stoll, Pap. Exot. iv. p. 244, pl. 100. f. M (1782).
Noctua inscripta, Esp. Schmett. iv. p. 229, pl. 113. f. 5 (1787).
Plusia percontationis, Treit. Eur. Schmett. v. 3, p. 184 (1826); Steph. Ill. Brit. Ent., Haust. iii. p. 101.
Noctua ancora, Frr. Neue Beitr. i. p. 89, pl. 47 (1833).
Plusia bartholomæii, Mén. Bull. Phys., Math. Acad. St. Petersb. 1859, p. 315; id. En. Mus. Petr. iii. p. 156, pl. 16. f. 9.
Plusia baltica, Speyer, Stett. Ent. Zeit. xxxvi. p. 103 (1875).
Plusia monogramma, Alph. Stett. Ent. Zeit. 1887, p. 171.
Plusia amurica, Staud. Rom. Mém. vi. p. 549 (1892).

Head and thorax bright rufous, the patagia and metathorax deep rufous mixed with some greyish; antennæ brown, ringed with whitish towards base; abdomen bright rufous, the crests deeper rufous, the scales tipped with greyish. Fore wing pink slightly irrorated and striated with brown, the basal costal area, medial area below the cell, and subterminal area deep rufous; subbasal line greyish, excurved below costa and ending at submedian fold; antemedial line whitish defined on each side by red-brown, strongly bent inwards in cell and obliquely curved below the cell; a brilliant silver ∀-shaped stigma below the cell with elliptical spot beyond its lower extremity; reniform with slight greyish outline and minute black points in its upper and lower extremities, strongly constricted at middle; an oblique rufous shade from middle of costa to lower angle of cell; postmedial line double, red-brown filled in with pinkish to vein 2, then by greyish, bent outwards below costa, then oblique and almost straight; subterminal line placed on the rufous shade, defined on outer side by pink towards costa and inner margin, blackish between veins 7 and 4, excurved below vein 7 and above and below vein 3; a fine rufous terminal line. Hind wing pinkish suffused with red-brown, the terminal area red-brown; a sinuous brown postmedial line, a fine dark terminal line defined on inner side by greyish to vein 2; the underside pink irrorated with brown, diffused oblique somewhat sinuous brown medial, postmedial, and subterminal lines.

Ab. 1. *percontationis*. Fore wing with the stigma below the cell forming a Y-mark.

Ab. 2. *inscripta*. Fore wing with the stigma below the cell absent or the V-mark much reduced and the spot beyond it absent.

Ab. 3. *ancora*. Paler.

Ab. 4. *baltica*. Darker.

Ab. 5. *amurica*. Much darker.—E. Siberia.

Ab. 6. *monogramma*. Similar to ab. 1 but darker.—W. Turkestan.

Hab. Britain, Leech Coll.; France, Sand & Leech Colls.; Germany, Zeller & Leech Colls.; Austria; Hungary; Switzerland; Spain, Leech Coll., Andalusia; N. Italy, Courmayeur (*Hampson*); Scandinavia; Russia, Livonia, Zeller Coll.; Armenia; W. Turkestan, Ferghana, Issyk-Kul; E. Siberia, Amurland, Ussuri. *Exp.* 40–48 millim. The locality Surinam for Stoll's figure is an error as also for the following figure *juventina*.

Larva. Meyr. Brit. Lep. p. 157; Barrett, Lep. Brit. vi. p. 121, pl. 242. f. 3; Hffm. Raup. p. 135, pl. 35. f. 13.

Pale green; dorsal line darker, edged with white; subdorsal and lateral lines white; spiracular line yellowish; dots whitish; head pale green. Food-plants, *Lamium*, *Urtica*, *Senecio*, etc. 8–5.

8368. Phytometra nigrisigna.

Plusia nigrisigna, Wlk. xii. 928 (1857); Butl. Ill. Het. B.M. vi. p. 36, pl. 110. f. 4; Hmpsn. Moths Ind. ii. p. 570.

Head and thorax rufous mixed with purple-grey; tegulæ purple-grey at tips; the spurs and tarsi brown ringed with white; abdomen grey tinged with rufous, the crests rufous and purple-grey at tips. Fore wing purple-grey irrorated and striated and in parts suffused with brown, a patch of chocolate-brown suffusion on medial area below the cell with some golden-cupreous before the postmedial line in submedian interspace, the subterminal area suffused with golden-cupreous; subbasal line silvery defined on each side by chocolate-brown and with a black striga before it below the cell, from costa to vein 1; antemedial line hardly traceable from costa to median nervure, excurved below costa and strongly incurved in cell, then silver defined on each side by chocolate-brown and obliquely curved; orbicular represented by a minute silver lunule above median nervure with a black point in it; an oblique U-shaped silver stigma below the cell with an elliptical spot beyond its lower extremity; reniform defined at sides by silver, its inner side oblique, its outer strongly constricted at middle with a black spot beyond it and slight black marks in its extremities; an oblique brown shade from costa to lower angle of cell and traces of an oblique slightly sinuous line from cell to inner margin; postmedial line indistinctly double, red-brown, filled in with silvery-white below vein 3, bent outwards below costa, then oblique to vein 2 with a slight whitish shade beyond it, then excurved and slightly angled inwards at submedian fold, some whitish points beyond it on costa; subterminal line chocolate-brown, excurved below costa and angled outwards below veins 4 and 3; a fine dark

terminal line defined on inner side by violaceous white from below apex to vein 2. Hind wing whitish tinged with cupreous brown, the terminal area cupreous brown; cilia white with a brown line near base; the underside white, the costal area tinged with rufous and irrorated with brown, a slight brown discoidal striga, rather diffused postmedial line excurved below costa, and subterminal shade.

Ab. 1. Fore wing with the stigma below the cell forming a Y-mark.

Ab. 2. Fore wing with the inner half of medial area and the subterminal area deeper cupreous brown.

Hab. Tibet; Japan, Yokohama (*Pryer*), 2 ♀; W. China, Moupin (*Kricheldorf*), 1 ♀, Chia-kou-ho (*Pratt*), 1 ♂; Kashmir, Goorais Valley (*Leech*), 1 ♂, Narkundar (*McArthur*), 1 ♀, Kuijar (*McArthur*), 1 ♂; Punjab (*Horne, Trimen*), 1 ♂, 1 ♀, Rawal Pindi, 1 ♂, Kasauli (*Swinhoe, Barrow*), 2 ♀, Campbellpur (*Yerbury*), 2 ♂, Dharmsála (*Hocking*), 3 ♂, 3 ♀, Wuzeerabad (*Hearsay*), 2 ♀ type, Manpuri, 1 ♂; Sikkim, 1 ♂; Bengal, Pusa (*Lefroy*), 1 ♂. *Exp.* 38–44 millim.

Larva. Green; dorsal, subdorsal, and lateral lines slight, white; tubercles white.

8369. **Phytometra schalisema**, n. sp. (Plate CCXXXVIII. fig. 23.)

♀. Head and thorax reddish brown mixed with some grey-white, the tegulæ with slight dark line at middle and whitish tips, the patagia with oblique whitish line near base; abdomen grey suffused with reddish brown. Fore wing greyish strongly suffused with reddish brown; minute subbasal black points above and below the cell; antemedial line very indistinct, pale, excurved below costa, then oblique and sinuous; a very oblique silvery stigma below the cell formed by a U-shaped mark conjoined to an elongate elliptical spot; reniform with slight silvery outline, strongly constricted at middle and with black marks in its extremities and beyond its middle; postmedial line double, brown filled in with greyish, bent outwards below costa, then oblique and slightly sinuous, angled outwards below vein 2, some whitish points beyond it on costa; subterminal line slight, silvery defined on inner side by dark brown suffusion, excurved below vein 7 and slightly angled outwards below veins 4 and 3; a dark brown terminal line with a narrow greyish band before it from apex to vein 2 defined on inner side by dark brown suffusion. Hind wing whitish suffused with cupreous red-brown especially on terminal area; the underside with diffused subterminal shade.

Hab. W. China, Huang-mu-chang (*Pratt*), 1 ♀ type. *Exp.* 40 millim.

8370. Phytometra gamma.

Noctua gamma, Linn. Syst. Nat. ed. x. p. 513 (1758); Esp. Schmett, iv. pl. cxi. f. 1; Hübn. Eur. Schmett., Noct. f. 283; Dup Lép. Fr. vii. 2. p. 41, pl. 136. f. 4; Steph. Ill. Brit. Ent., Haust. iii. p. 103; Frr. Neue Beitr. pl. 544; Staud. Cat. Lep. pal. p. 238.
Plusia gammina, Staud. Cat. Lep. pal. p. 238 (1901).
Plusia alepica, Nitsche, Verh. zool.-bot. Ges. Wien, lxi. p. 52 (1911).

Head and thorax reddish brown mixed with grey, the tegulæ with dark line at middle and tipped with grey; antennæ ringed blackish and white towards base; tarsi ringed with whitish; abdomen grey tinged with red-brown, the crests red-brown at tips. Fore wing grey with a golden cupreous gloss and irrorated and striated with brown, the medial area with a patch of golden-brown suffusion below the cell; subbasal line silvery defined on each side by golden brown towards costa, with a black point before it above subcostal nervure and a black striga below the cell, sinuous, from costa to vein 1; antemedial line silvery defined on each side by golden brown, angled outwards below costa, strongly incurved in cell, then oblique and sinuous; orbicular with silvery annulus, oblique, elliptical; an oblique silver Y-shaped stigma below the cell, its tail somewhat dilated at extremity; reniform with silvery outline and small blackish marks in its extremities, its inner edge

Fig. 126.—*Phytometra gamma*, ♂. ½.

oblique, its outer strongly constricted at middle with a small blackish mark beyond it; postmedial line golden brown filled in with silvery white, bent outwards below costa, then oblique and very slightly sinuous to vein 2 where it is angled inwards, then excurved and waved, some whitish suffusion beyond it on costal half and some whitish points on costa; subterminal line brown with golden-brown suffusion before it, excurved below vein 7 and angled outwards below veins 4 and 3; a slight white line before termen from just below costa to vein 2 with golden-brown suffusion before it; the termen whitish expanding into a triangular patch below vein 2 and with a fine waved brown terminal line. Hind wing white tinged with red-brown, the terminal area dark brown with a cupreous gloss; cilia white with a series of small brown spots from apex to vein 2; the underside white irrorated with brown, the terminal area suffused brown, a faint oblique postmedial line.

Ab. 1. *alepica*. Fore wing paler.

Ab. 2. *gammina*. Much smaller; fore wing with the stigma larger.—Asia Minor, Syria.

Hab. Britain, Leech Coll.; France, Sand Coll., Hyères (*Yerbury*); Germany, Zeller & Leech Colls.; Austria; Hungary; Switzerland, Frey Coll.; Spain; Italy, Capri (*C. S. Browne*), Catania, Zeller Coll.; Sicily, Zeller Coll.; Algeria, Tkout (*Walsingham*), 1 ♂, Hammam-es-Salahin (*Walsingham*), 1 ♂; Morocco, Tangier (*Leech*), 1 ♂; Madeira (*Wollaston*), 4 ♂; Canaries (*Leech*), 1 ♂, Teneriffe, Sta. Cruz (*Walsingham*), 1 ♀; Dalmatia; Greece; Balkan States; Scandinavia, Zeller Coll.; Russia, Livonia, Zeller Coll., St. Petersburg, Zeller Coll., S. Russia (*Grum-Grishmaillo*); Armenia; Asia Minor (*Lederer*), 1 ♂, Amanus Mts., Eybes, 1 ♀; Syria, 1 ♂, Leech Coll., Beyrut (*Jessup*), 1 ♂; Cyprus (*Glaszner*), 1 ♂; Egypt, Gizeh (*Flower*), 2 ♀; Persian Gulf, Fao (*Cumming*), 1 ♀; W. Turkestan; W. Siberia; E. Turkestan; E. Siberia, Amurland, 1 ♀; Japan; W. China, Chow-pin-sa, 1 ♀. *Exp.* 40–48 millim.

Larva. Meyr. Brit. Lep. p. 158; Barrett, Lep. Brit. vi. p. 125, pl. 243. f. 1; Hffm. Raup. p. 135, pl. 35. f. 14.

Green; dorsal line double, whitish; subdorsal and lateral lines whitish; spiracular line yellowish; dots whitish. Food-plants: *Urtica, Sonchus, Geranium, Lamium*, etc. 6–4.

8371. Phytometra pseudogamma. (Plate CCXXXVIII. fig. 24.)

Plusia pseudogamma, Grote, Can. Ent. vii. p. 203 (1875); Ottolengui, J. N.Y. Ent. Soc. x. pl. ix. f. 8; Smith, Cat. Noct. N. Am. p. 251.
Plusia russea, H. Edw. Ent. Am. ii. p. 170 (1886); Smith, Cat. Noct. N. Am. p. 252.
Plusia gamma, Smith, Cat. Noct. N. Am. p. 251 (nec Linn.).

Head and thorax chocolate-brown mixed with purple-grey, the tegulæ and metathoracic crest with some rufous; antennæ ringed with black towards base; the spurs and tarsi brown ringed with white; abdomen grey suffused with red-brown, the crests chocolate-brown with purple-grey at tips. Fore wing glossy purple-grey suffused in parts with chocolate-brown and sparsely irrorated with black, the medial area with a patch of deep chocolate-brown below the cell with some golden-cupreous before the postmedial line in submedian interspace, the subterminal area suffused with chocolate-brown with a golden-cupreous gloss; subbasal line silvery defined on each side by chocolate-brown with a black point before it above subcostal nervure and striga below the cell, excurved below costa and ending at submedian fold; antemedial line silvery defined on each side by chocolate-brown, angled outwards below costa, strongly bent inwards in cell, then oblique and excurved above vein 1; orbicular with silvery outline, oblique elliptical; an oblique silver Y-shaped stigma below the cell, its tail dilated into a spot; reniform with silvery outline, its centre defined by blackish on outer side, its inner edge oblique, its outer strongly constricted at middle; an

oblique brown shade from costa to lower angle of cell; postmedial line double, chocolate-brown filled in with whitish and with silvery-white below vein 2, bent outwards below costa, then oblique to vein 2 where it is angled inwards, then excurved and slightly angled inwards at submedian fold, a white shade beyond it and some white points at costa; subterminal line chocolate-brown, excurved below vein 7 and angled outwards below veins 4 and 3; a fine dark terminal line defined on inner side by white from below apex to vein 2. Hind wing pale cupreous brown, the terminal area deep cupreous brown, a slight whitish postmedial shade; cilia white with a brown line near base; the underside pale rufous, the costal area irrorated with brown, the terminal area suffused with brown, a slight brown discoidal striga and indistinct diffused postmedial line.

Ab. 1. Fore wing with the spot of the stigma separate from the Y-mark.—Newfoundland.

Hab. Newfoundland, Doyles, Cadroy Valley (*Beddek*), 1 ♂; Canada, Cape Breton, 1 ♂ type, Hudson's Bay, Albany R., St. Martin's Falls (*Barnston*), 1 ♀, Alberta, Calgary (*Wolley-Dod*), 1 ♂, 1 ♀, Br. Columbia, Revelstoke (*Mrs. Nicholl*), 1 ♂; U.S.A., California (*Walsingham*), 1 ♀. *Exp.* 42–46 millim.

8372. **Phytometra californica.** (Plate CCXXXVIII. fig. 25.)

Plusia californica, Speyer, Stett. Ent. Zeit. xxxvi. p. 164 (1875); Ottolengui, J. N.Y. Ent. Soc. x. pl. viii. f. 11; Smith, Cat. Noct. N. Am. p. 252.

Head and thorax purple-grey mixed with chocolate-brown, the tegulæ with black-brown lines near base, at middle, and near tips defined behind with white, the metathoracic crest tipped with black-brown and white; pectus and legs grey and rufous, the spurs and tarsi brown ringed with white; abdomen grey suffused with brown, the crests darker with grey tips. Fore wing pale glossy purplish grey irrorated with black and suffused in parts with chocolate-brown, the medial area with a patch of deep chocolate-brown below the cell and some golden cupreous before the postmedial line in submedian interspace; subbasal line silvery defined on each side by chocolate-brown, excurved below costa and ending at vein 1; antemedial line silvery-white defined on each side by chocolate-brown, angled outwards below costa, strongly bent inwards in cell, then oblique and excurved above vein 1; orbicular defined by diffused white, narrow, oblique; an oblique silvery Y-shaped stigma below the cell, its tail slightly dilated at extremity; reniform with silvery-white outline, its inner edge oblique, its outer strongly constricted at middle with a slight black mark beyond it and black marks in its extremities; an oblique dark shade from costa to lower angle of cell and indistinct oblique sinuous line from cell to inner margin; postmedial line double, chocolate-brown filled in with white, bent outwards below costa, then oblique and slightly waved to vein 2 where it is angled inwards, then excurved and angled inwards at submedian fold, some white points beyond it on costa; subterminal line chocolate-brown with chocolate-brown

suffusion before it from vein 7 to 4, slightly waved, bent outwards at vein 7 and excurved below veins 4 and 3; a white line before termen from just below costa to vein 2 with chocolate-brown suffusion before it; a terminal series of slight dark lunules; cilia brown and white with fine waved white lines at base and middle. Hind wing whitish suffused with red-brown, the terminal area dark cupreous brown; cilia white, chequered with dark brown at base from apex to vein 2; the underside white irrorated with brown, the terminal area suffused with brown.

Hab. CANADA, Alberta, Calgary (*Wolley-Dod*), 1 ♂, 1 ♀, Br. Columbia (*Lord*), 1 ♂, Ashnold (*Mrs. Nicholl*), 1 ♀, Bear Creek (*Mrs. Nicholl*), 1 ♀, Duncan's (*Hanham*), 1 ♀, Kaslo (*Fletcher, Cockle*), 1 ♂, 1 ♀, Vancouver I. (*Lyall, J. J. Walker*), 2 ♂, 2 ♀, Cowichan Bay (*Livingstone*), 2 ♀; U.S.A., Colorado (*Cockerell*), 2 ♀, Berkeley (*Oslar*), 2 ♀, California (*Osten-Sacken, Walsingham, D'Urban*), 1 ♂, 2 ♀, Kern Co., 1 ♂, Havilah, 1 ♂. *Exp.* 36–44 millim.

Larva. Dyar, Ent. Am. vi. p. 14.

Dark green, dorsal line white slightly sinuous and interrupted, subdorsal line white; lateral line white, rather broader; a white stigmatal stripe, diffused below; warts whitish with white hairs, the suprastigmatal warts with black centres; 4th–9th somites with small dorsal black spots on anterior part of somites; spiracles white with black ring; head green, the jaws and palpi black; the head sometimes with black stripe; three pairs of prolegs. Pupates in a thin web of white silk. Food-plant, *Malva*.

8373. **Phytometra flagellum.** (Plate CCXXXVIII. fig. 26.)

Plusia flagellum, Wlk. xii. p. 909 (1857); Ottolengui, J. N.Y. Ent. Soc. x. pl. ix. f. 9; Smith, Cat Noct. N. Am. p. 251.
Plusia monodon, Grote, Can. Ent. vii. p. 202 (1875).
Plusia insolita, Smith, Ent. News Philad. vii. p. 30, pl. xv. f. 17 (1896).

Head and thorax red-brown mixed with white; tegulæ with slight dark line at middle defined behind by white and white tips, the patagia with oblique white line near base and white tips, the metathoracic crest tipped with white; pectus, legs, and abdomen greyish mixed with brown, the tarsi ringed with white, the abdominal crests red-brown and white. Fore wing silvery-grey suffused and irrorated with dark reddish brown; subbasal line double, silvery-white and obliquely curved from costa near the antemedial line to median nervure, where there is a black point above it, then with double silvery striæ filled in with black; antemedial line silvery, slightly defined on inner side by red-brown and strongly on outer side by dark brown, strongly angled outwards below costa and inwards at median nervure, then obliquely curved; orbicular with silvery outline and its centre defined by blackish, oblique elliptical; a very oblique and elongate silver Y-shaped stigma below the cell, its arms with whitish between them and its tail extending to near the postmedial line; reniform with slight

silvery outline, oblique, strongly constricted at middle and with some black in its extremities; postmedial line double, dark brown filled in with silvery-white, bent outwards below costa, then oblique to vein 2 where it is angled inwards, then excurved, some white points beyond it on costa; subterminal line dark defined on inner side by brown suffusion, excurved below vein 7, angled outwards below vein 4 and inwards at vein 2; a blackish terminal line with a narrow white band before it defined on inner side by chocolate-brown from apex to vein 2; cilia whitish with a brown line through them. Hind wing ochreous suffused with cupreous red-brown, the terminal area darker; a fine dark terminal line slightly defined on inner side by whitish except towards tornus; cilia white with a brown line through them; the underside ochreous irrorated with red-brown, the terminal area tinged with red-brown.

Hab. Canada, Hudson's Bay, Albany R., St. Martin's Falls (*Barnston*), 2 ♂, 1 ♀ type, Cape Breton (*Thaxter*), 1 ♂, 1 ♀ type *monodon*, Alberta, Calgary (*Wolley-Dod*), 3 ♂, 2 ♀, High R. (*Baird*), 2 ♀. *Exp.* 42–48 millim.

8374. **Phytometra ou.** (Plate CCXXXVIII. fig. 27.)

Plusia ou, Guen, Noct. ii. p. 348 (1852); Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 10; Druce, Biol. Centr.-Am., Het. i. p. 331; Smith, Cat. Noct. N. Am. p. 252.

Plusia fratella, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 161 (1874); Smith, Cat. Noct. N. Am. p. 252.

Head and thorax brown mixed with grey-white; tarsi brown ringed with white; abdomen grey suffused with brown, the crests browner, the ventral surface whiter. Fore wing grey suffused with cupreous brown and slightly irrorated with black, the medial area with a patch of deeper cupreous brown below the cell and the subterminal area deeper cupreous brown; subbasal line indistinct, silvery defined on each side by brown and with black striga before it below the cell, sinuous, from costa to vein 1; antemedial line indistinct, double, cupreous brown, angled outwards below costa, then waved; orbicular indistinctly defined by whitish, oblique V-shaped; an oblique silvery V-shaped stigma below the cell, with a small elliptical spot beyond its lower extremity; reniform with faint pale outline, constricted at middle and with black striga in upper extremity; an indistinct diffused brown medial line, oblique to lower angle of cell, then inwardly oblique; postmedial line indistinct, double, cupreous brown, bent outwards below costa, then oblique and minutely waved, slightly excurved below vein 2, a pale grey shade beyond it and some white points on costa; subterminal line brown defined on outer side by pale grey and with a dark streak before it below vein 6, slightly waved, bent outwards at vein 7 and angled below veins 4 and 3; a fine lunulate dark terminal line defined on inner side by pale grey except at apex; a fine white line at base of cilia. Hind wing whitish suffused with cupreous brown, the terminal area cupreous brown; an indistinct postmedial

line; cilia white chequered with brown from apex to vein 2; the underside white irrorated with brown, the terminal area more suffused with brown.

Ab. 1. Fore wing with the stigma forming a Y-mark.

Ab. 2. Fore wing with the tail of the stigma much reduced.

Hab. U.S.A., New York, Illinois, 1 ♀, Florida (*Doubleday*), 1 ♀ type, Texas, 1 ♂ type *fratella*, Dallas (*Boll*), 1 ♂, 2 ♀, Nebraska, Colorado, Boulder (*Cockerell*), 1 ♂, New Mexico, Roswell (*Cockerell*), 1 ♀, Arizona, Nogales (*Oslar*), 1 ♂, 3 ♀; Mexico, Jalapa (*Trujillo*), 1 ♂, 3 ♀, Vera Cruz, Atoyac (*Schumann*), 1 ♂, 1 ♀, Durango (*Becker*), 1 ♂, Cuernavaca, Misantla (*Trujillo*), 1 ♂, 1 ♀, Orizaba (*Godman*), 1 ♀, Mexico City (*Hoege*), 1 ♂; Guatemala City (*Rodriguez*), 1 ♂, Cerro Zunil (*Champion*), 1 ♂; Costa Rica, Rio Sucio (*Rogers*), 1 ♂; Bermuda, Challenger Coll., 1 ♂; Jamaica, Cinchona (*Fawcett, Kaye*), 1 ♂, 1 ♀; Venezuela (*Dyson*), 2 ♂, 1 ♀. *Exp.* 30–44 millim.

8375. **Phytometra purpureofusa.** (Plate CCXXXVIII. fig. 28.)

Plusia purpureofusa, Hmpsn. Moths Ind. ii. p. 570 (1894).

Head and thorax dark red-brown mixed with purplish grey, the tegulæ bright rufous with grey lines at middle and tips; palpi and legs chocolate-brown, the tarsi ringed with white; abdomen greyish suffused with red-brown, the crests chocolate-brown. Fore wing silvery purple-grey suffused in parts with chocolate-brown and irrorated with black, the medial area with deep chocolate-brown patch below the cell; subbasal line represented by an obliquely curved grey striga from costa; antemedial line grey defined on each side by chocolate-brown, angled outwards below costa and inwards in cell, then obliquely curved; orbicular with diffused greyish outline and its centre defined by chocolate-brown, narrow, oblique; an oblique U-shaped silvery-white stigma below the cell with small spot beyond its lower extremity; reniform with grey outline and its centre defined by chocolate-brown with black marks in its extremities, its inner edge oblique, its outer constricted at middle; postmedial line double, chocolate-brown filled in with grey, strongly bent outwards below costa, then oblique and slightly waved, angled inwards at vein 2, some whitish points beyond it on costa and some golden cupreous before it below vein 2; subterminal line chocolate-brown with some chocolate-brown suffusion on its inner side from below costa to vein 4, then a slight dentate shade well before it to inner margin, the line excurved below veins 7, 4, 3; the termen pale greyish flesh-colour with a bright rufous shade before it from apex to vein 2; a fine rufous terminal line. Hind wing whitish tinged with cupreous brown, the terminal area cupreous brown; cilia whitish faintly chequered with red-brown; the underside white tinged and irrorated with red-brown, diffused brown postmedial and subterminal lines.

Hab. Sikhim Tibet, Yatung (*Hobson*), 7 ♂, 2 ♀; Sikhim (*Möller*), 2 ♂. *Exp.* 42 millim. Type † ♂ in Coll. Rothschild.

8376. **Phytometra dudgeoni**, n. sp. (Plate CCXXXVIII. fig. 29.)

♂. Head and thorax rufous mixed with ochreous whitish, the tegulæ and patagia grey at tips; abdomen ochreous tinged with rufous, the crests chocolate-brown at tips. Fore wing bright rufous suffused with metallic gold except a patch on medial area below the cell and the terminal area except towards tornus; subbasal line represented by an obliquely curved rufous striga from costa; antemedial line indistinctly double, rufous, excurved below costa and cell and somewhat oblique; orbicular with very slight greyish outline, oblique and somewhat quadrate; a small oblique brilliant silver Y-shaped stigma below the cell, its tail very short; reniform with hardly traceable pale outline, very small and strongly constricted at middle; postmedial line indistinct, double, rufous, incurved below vein 4 to below end of cell, then oblique; subterminal line hardly traceable, rufous, excurved below vein 7 and slightly below veins 4 and 3. Hind wing ochreous tinged with cupreous red-brown; a faint oblique postmedial line and subterminal shade; the underside slightly irrorated with red-brown and with slight discoidal spot.

Hab. Bhután (*Dudgeon*), 1 ♂ type. *Exp.* 44 millim.

* 8377. **Phytometra limata.** (Plate CCXXXVIII. fig. 30.)

Plusia limata, Schaus, A. M. N. H. (8) vii. p. 50 (1911).

♂. Head, thorax, and abdomen pale grey-brown, the tegulæ slightly tinged with rufous and tipped with grey. Fore wing purplish grey irrorated with brown, the inner half of medial area brown with a cupreous gloss; a diffused oblique cupreous brown subterminal shade; subbasal line brown defined on outer side by whitish, oblique, sinuous, from costa to vein 1; antemedial line brown defined on outer side by whitish, oblique, slightly curved inwards to inner margin; orbicular and reniform with whitish annuli defined by brown, the former elliptical, the latter open above and below, its outer edge indented; the stigma below the cell silvery-white, Y-shaped filled in with grey, small and with its tail slightly lobed; postmedial line brown defined on inner side by white, oblique, excurved to vein 4, then incurved; subterminal line grey defined on inner side by brown, excurved below vein 7, then oblique; a brown line slightly defined on outer side by white before termen from costa to below vein 4; a fine black terminal line. Hind wing grey suffused with brown; cilia whitish; the underside white tinged and irrorated with brown, a diffused curved brown postmedial line and faint subterminal shade.

Hab. Costa Rica, Juan Vinas (*Schaus*), type † ♂ in U.S. Nat. Mus. *Exp.* 44 millim.

8378. Phytometra jessica.

Plusia jessica, Butl. A. M. N. H. (5) i. p. 201 (1878); id. Ill. Het. B.M. iii. p. 22, pl. 46. f. 6; Hmpsn. Moths Ind. ii. p. 568.
Plusia serena, Butl. A. M. N. H. (5) iv. p. 368 (1879).

Head and thorax red-brown mixed with grey; tarsi ringed with white; abdomen pale red-brown, the crests deep red-brown. Fore wing purplish grey suffused with red-brown and irrorated with blackish, the medial area with a patch of deep chocolate-brown below the cell; subbasal line represented by silvery striæ from costa and cell defined on each side by black below the costa and on lower side below the cell; antemedial line silvery defined on each side by chocolate-brown, angled outwards below costa, incurved in cell, then oblique and sinuous, a black mark before it at inner margin; orbicular small, narrow and oblique, chocolate-brown with silvery outline; an oblique silver Y-shaped stigma below the cell, its tail somewhat dilated at extremity; reniform with slight silvery outline, strongly constricted at middle and with slight black marks in its four extremities; postmedial line double, chocolate-brown filled in with silvery, bent outwards below costa, then oblique and minutely waved, slightly below submedian fold, some white points beyond it on costa; subterminal line black-brown defined on inner side by chocolate-brown suffusion, excurved below veins 7, 4, 3; a waved chocolate-brown shade beyond it from apex to vein 2; a terminal series of slight blackish lunules. Hind wing ochreous suffused with cupreous red-brown, the terminal area rather darker; traces of a postmedial line between veins 5 and 2; cilia with a fine pale line at base; the underside rather paler with indistinct postmedial line.

Hab. Japan, Tokio (*Maries*), 1 ♀, Yokohama (*Jonas*, *Pryer*), 2 ♂, 4 ♀, type and type *serena*; Punjab, Simla (*Harford*), 1 ♂, 1 ♀, Dalhousie (*Harford*), 1 ♀; Assam (*Badgley*), 1 ♂. *Exp.* 30–34 millim.

8379. Phytometra bella.

Plusia bella, Christ. Stett. Ent. Zeit. xlviii. p. 164 (1887); id. Rom. Mém. v. p. 36, pl. 2. f. 7; Staud. Cat. Lep. pal. p. 239.

Head and thorax white mixed with pale brown; abdomen white suffused with brown. Fore wing white suffused in parts with pale red-brown and slightly irrorated with brown, the medial area with a pale red-brown patch below the cell; subbasal line with double white striæ from costa filled in with black-brown and white striga from cell defined on inner side by black-brown; antemedial line white defined on each side by red-brown, angled outwards below costa, then bent inwards, obliquely curved below the cell and angled outwards below submedian fold; orbicular with white annulus, oblique elliptical; an oblique silvery-white Y-shaped stigma below the cell, its tail dilated at extremity; reniform with white annulus, its centre defined by dark brown, strongly constricted at middle; an indistinct diffused brown medial line, rather oblique and slightly

sinuous below the cell; postmedial line double, red-brown filled in with white, bent outwards below costa, then oblique and slightly sinuous; subterminal line white defined on inner side by rather diffused dark brown, waved, excurved below vein 7 and at middle and strongly angled inwards at discal and submedian folds, a reddish brown shade beyond it; a terminal series of dark striæ defined on inner side by white except towards apex and tornus; cilia chequered white and red-brown. Hind wing whitish suffused with red-brown with a golden gloss; cilia white with a red-brown line through them; the underside white irrorated with pale brown, diffused oblique postmedial and subterminal lines.

Hab. W. Turkestan, Turcomania, Askhabad, 1 ♂, 1 ♀. *Exp.*, ♂ 30, ♀ 32 millim.

8380. **Phytometra pasiphæia.** (Plate CCXXXVIII. fig. 31.)

Plusia pasiphæia, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 146, pl. iv. f. 1 (1873); Ottolengui, J. N.Y. Ent. Soc. x. pl. ix. f. 14; Smith, Cat. Noct. N. Am. p. 256.

Head and thorax yellowish suffused with rufous, the tegulæ at tips and patagia above edged with white; the metathoracic crest tipped with white; pectus and legs whitish tinged with rufous; abdomen yellowish tinged with rufous, the crests rufous and white at tips. Fore wing whitish tinged and irrorated with red-brown, the medial area bright rufous below the cell, the terminal area suffused with rufous with a golden gloss; subbasal line represented by a curved whitish striga from costa; antemedial line silvery-white, angled outwards below costa, incurved in cell, inwardly oblique below the cell; orbicular defined by whitish, narrow, oblique elliptical; an oblique silvery-white Y-shaped stigma below the cell, its arms separating widely, its tail narrow; reniform slightly defined by whitish, its outer edge constricted at middle; postmedial line silvery-white slightly defined on outer side by red-brown with a whitish shade beyond it, bent outwards below costa, then oblique and almost straight, some whitish points beyond it on costa; subterminal line indistinct, red-brown, excurved below veins 7, 4 and 3 and bent inwards at vein 2, a narrow whitish band before the slight lunulate brown terminal line, the whitish forming a triangular patch below vein 2. Hind wing yellowish white tinged with rufous, the terminal area suffused with red-brown with a cupreous gloss; cilia white with a slight red-brown line through them; the underside yellow tinged with rufous especially on terminal area.

Hab. U.S.A., California, 2 ♂ type (*Walsingham*), 1 ♀. *Exp.* 36 millim.

*8381. **Phytometra sansoni.** (Plate CCXXXVIII. fig. 32.)

Autographa sansoni, W. Dod, Can. Ent. xlii. p. 349 (1910).

♂. Head and thorax deep red-brown mixed with dark brown and purplish grey; spurs and tarsi blackish with pale rings; abdomen

brown irrorated with grey, the sides yellowish towards base, then purplish red. Fore wing dark brown suffused in parts with purple and slightly striated with grey; pale golden subbasal striæ from costa and cell, the former with a whitish striga beyond it; antemedial line pale golden defined on inner side by rufous, then by grey, oblique from costa, interrupted in cell and obliquely curved from cell to inner margin; the stigma below the cell pale golden, Y-shaped with long curved tail and fulvous streak below it; orbicular defined by grey and by pale golden below, narrow, oblique, constricted at middle; reniform defined at sides by black and pale golden, its outer edge strongly indented; postmedial line pale golden, defined on outer side by rufous then by purple, bent outwards below costa, then oblique and sinuous below vein 2; subterminal line blackish, excurved below vein 7 and at middle and slightly angled inwards in submedian fold, with slight golden suffusion before it below veins 3, 2; a terminal series of brown striæ defined on inner side by a slight golden line; cilia with a series of black points at base. Hind wing yellow with broad black terminal band; cilia ochreous with a blackish line through them; the underside irrorated with fuscous except below the cell, a blackish discoidal spot, a diffused ochreous subterminal line defined on inner side by blackish and on outer by brownish, angled outwards at discal fold.

Hab. Canada, Alberta, Banff, type † ♂ in Coll. U.S. Nat. Mus. *Exp.* 40 millim.

8382. **Phytometra exquisita.**

Plusia exquisita, Feld. Reis. Nov. pl. 110. f. 30 (1874).

Head and thorax rufous mixed with white and some black scales; tegulæ with black medial line and blue-black and white tips; pectus and legs white mixed with red-brown, the tarsi ringed with white; abdomen orange-yellow suffused with rufous, the crests deep rufous with some blackish at base and white tips, the ventral surface white with sublateral series of black striæ. Fore wing red-brown mixed with silvery-grey and irrorated with black; subbasal line black defined on outer side by white, red and silvery-blue, sinuous, from costa to submedian fold; antemedial line black defined on inner side by white and in submedian interspace by silvery-blue and some red, waved, incurved in cell; orbicular defined by silvery-white except above, oblique U-shaped; an oblique U-shaped silvery-white stigma below the cell, its lower extremity conjoined to an elliptical silvery-white spot, a slight white mark between its arms; reniform faintly defined by black and white scales, its outer edge indented at middle; postmedial line black defined on outer side by creamy-white with red marks on it except between veins 4 and 2 and silvery-blue below costa and from vein 4 to inner margin, slightly bent outwards below costa, then sinuous, excurved below veins 7 and 6 and angled outwards at veins 3 and 1, some white points beyond it on costa; subterminal line black defined on outer side by

creamy-white followed by rufous, the creamy-white forming a patch in submedian interspace, the line excurved below costa and crenulate below vein 4; a terminal series of slight black lunules; cilia with a waved dark line near base, the tips chequered brown and whitish. Hind wing orange, the terminal area black-brown; cilia orange with a rather maculate black-brown line through them. Underside of fore wing brown with some orange in, below, and beyond the cell; hind wing with the costal area irrorated with brown.

Ab. 1. Fore wing with the stigma below the cell filled in with white and its whole outer edge confluent with the spot.

Ab. 2. Fore wing with the orbicular also filled in with white.

Hab. Transvaal, Pretoria (*Distant*), 1 ♂, Johannesburg (*Cregoe*), 1 ♂, 1 ♀; Natal, Newcastle, 1 ♂, Northdene, 1 ♂; Basutoland, Maseru (*Crawshay*), 1 ♂; Orange R. Colony, Bloemfontein (*Eckersley*), 1 ♀; Cape Colony, Transkei (*Miss F. Barrett*), 1 ♂, 9 ♀; Baluchistan, Quetta (*Nurse*), 1 ♀. *Exp.* 34–40 millim.

8383. Phytometra semivitta.

Plusia semivitta, Moore, P. Z. S. 1867, p. 63, pl. 6. f. 13.

Head, thorax, and abdomen grey mixed with red-brown, the tegulæ red-brown before the tips which are grey, the patagia with oblique red-brown shade. Fore wing grey thickly irrorated with red-brown, the medial area below the cell suffused with red-brown; antemedial line red-brown defined on inner side by whitish, angled outwards below costa, obsolete in cell, inwardly oblique below the cell; an oblique red-brown shade across end of cell; an elongate very oblique silvery stigma below the cell, angled inwards on median nervure to the antemedial line, somewnat constricted at middle and pointed at extremity; postmedial line red-brown defined on outer side by whitish, arising just below costa, oblique, very slightly incurved below vein 4; an oblique red-brown shade from apex to vein 4 just beyond the postmedial line; subterminal line whitish defined on inner side by red-brown, from vein 4 to inner margin; a whitish line defined on inner side by red-brown marks before termen from below apex to vein 3. Hind wing whitish suffused with red-brown, the terminal area red-brown; a slight sinuous postmedial line; cilia whitish with a brown line through them; the underside white thickly irrorated with red-brown, the postmedial line distinct.

Hab. Sikhim (*Möller*), 2 ♂, 2 ♀ type; Assam (*Badgley*), 1 ♀, Naga Hills (*Doherty*), 1 ♀. *Exp.* 36 millim.

8384. Phytometra purissima. (Plate CCXXXIX. fig. 1.)

Plusia purissima, Butl. A. M. N. H. (5) i. p. 202 (1878).

Head and thorax grey-white mixed with red-brown, the tegulæ with red-brown line near tips, the patagia with oblique red-brown

shade near tips, the metathoracic crest chocolate-brown at tips; abdomen grey-white mixed with red-brown, the basal crest chocolate-brown tipped with white. Fore wing violaceous white irrorated with reddish brown, the medial area below the cell suffused with olive-brown and the postmedial area below vein 4 tinged with olive; an obliquely curved subbasal red-brown striga from costa; antemedial line chocolate-brown defined on inner side by white, angled outwards below costa, interrupted in cell and oblique below the cell; an oblique red-brown shade across end of cell and a small wedge-shaped chocolate-brown spot above lower angle; the stigma below the cell composed of two obliquely placed silvery spots defined by chocolate-brown, the basal spot narrow, the other elliptical; postmedial line chocolate-brown defined on outer side by white, strongly bent outward and almost obsolete below costa, then oblique and very slightly incurved below vein 4, a faint reddish tinge before it below vein 2; subterminal line white defined on inner side by brown, arising at vein 7, obliquely curved to vein 5, then straight, an olive shade beyond it between veins 7 and 3; a whitish line defined on inner side by chocolate-brown before termen from apex to vein 2; a fine chocolate-brown terminal line; cilia chocolate-brown at tips. Hind wing whitish suffused with red-brown, the terminal area red-brown, an indistinct sinuous postmedial line; cilia white with a brown line through them; the underside white irrorated with red-brown, a brown discoidal striga, distinct postmedial line and subterminal shade.

Hab. Japan, Tokio (*Maries*), 1 ♀, Yokohama (*Jonas*, *Pryer*), 3 ♂ type; Corea, Gensan (*Leech*), 1 ♀; C. China, Ship-y-Shán, 1 ♂; W. China, Chang-yang (*Pratt*), 1 ♂, Omei-shán, 1 ♀, Kwei-chou, 1 ♂, Ta-chien-lu (*Pratt*), 1 ♀, Huang-ma-chang (*Pratt*), 1 ♂, Moupin (*Kricheldorf*), 1 ♂. *Exp.* 30–36 millim.

8385. **Phytometra tetragona.** (Plate CCXXXIX. fig. 2.)

Plusia tetragona, Wlk. xii. 932 (1857); Hmpsn Moths Ind. ii. p. 574; Swinh. Cat. Het. Mus. Oxon. ii. p. 182.

Head, thorax, and abdomen white tinged with red-brown. Fore wing white slightly irrorated with red-brown, the medial area below the cell chocolate-brown; antemedial line chocolate-brown defined on inner side by white, faint and angled outwards below costa, obsolete in cell, then oblique and curved inwards to inner margin; an oblique red-brown shade from costa across end of cell; a very oblique silvery-white stigma below the cell, its upper edge indented at middle; postmedial line chocolate-brown defined on outer side by white, arising below costa, oblique, very slightly incurved below vein 4; subterminal line white defined on inner side by brown, arising at vein 7, obliquely curved to vein 5, then almost straight; a white line defined on inner side by brown suffusion before termen from apex to vein 2; cilia red-brown at tips. Hind wing whitish suffused with red-brown, the terminal area red-brown; an indistinct postmedial line; cilia white with a red-brown line near base; the

underside white irrorated with red-brown, a brown discoidal striga, distinct postmedial line, and subterminal shade.

Hab. "INDIA," type† ♀ in Mus. Oxon.; PUNJAB, Kulu (*Hocking*), 2 ♀, Deyra Dhun, 2 ♂. *Exp.* 36 millim.

8386. **Phytometra anda.**

Plusia anda, Druce, P. Z. S. 1890, p. 518; id. Biol. Centr.-Am., Het. ii. p. 503, pl. 96. f. 10.

♂. Head and thorax grey-white mixed with red-brown; abdomen grey suffused with red-brown, the crests black-brown, grey at tips. Fore wing pale violaceous grey tinged with red-brown and irrorated with dark brown, the veins with slight dark streaks; the end of cell, medial area below the cell and postmedial area towards inner margin suffused with deep golden brown; subbasal line slight, dark brown defined on outer side by whitish, from costa to submedian fold; antemedial line dark brown defined on outer side by whitish, oblique and almost straight; orbicular a small triangular grey spot defined by dark brown; a small U-shaped silvery stigma filled in with silver and with its inner arm produced to a streak below median nervure, with a round spot beyond its lower extremity; reniform with slight silvery outline and blackish brown marks in its extremities, its outer edge strongly indented at middle where there is some dark brown beyond it; postmedial line dark chocolate-brown defined on outer side by whitish, excurved to vein 4, then oblique; subterminal line chocolate-brown slightly defined on outer side by whitish, arising below costa, slightly excurved at vein 6 then oblique; a chocolate-brown line before termen from costa to vein 2, with a narrow violaceous white band beyond it before the fine chocolate-brown terminal line. Hind wing reddish brown, the basal and costal areas whitish; cilia whitish with a brown line through them; the underside whitish tinged with brown.

Hab. GUATEMALA CITY (*Rodriguez*), 1 ♂ type Godman-Salvin Coll. *Exp.* 40 millim.

*8387. **Phytometra orbifer.**

Plusia orbifer, Guen. Vinson's Voyage à Madagascar, Annexe F, p. 47, pl. vi. f. 3 (1865).

♂. Head and thorax red-brown, the tegulæ with blackish tips, a blackish line across prothorax; abdomen grey-brown. Fore wing deep chocolate-red to the postmedial line except the costal area which is pinkish grey from near base to near apex, the terminal area fuscous brown with a pinkish grey spot on termen at discal fold and a triangular patch in submedian interspace; subbasal line pale golden-yellow, from costa to submedian fold; antemedial line pale golden-yellow, obsolete towards costa, oblique and sinuous from cell to inner margin; orbicular pale golden-yellow, round; a U-shaped stigma below the cell silvery with golden edges and with

a similar large elliptical spot below it; reniform pale golden yellow with its centre defined by brown, constricted at middle; postmedial line pale golden yellow, slightly waved, its inner edge dentate towards costa and at submedian fold, oblique, incurved at vein 1. Hind wing brownish grey with a diffused dark postmedial shade.

Hab. Madagascar. *Exp.* 50 millim. This species is unknown to me.

8388. **Phytometra parabractea**, n. sp. (Plate CCXXXIX. fig. 3.)

♂. Head and thorax purplish red-brown slightly mixed with grey, the palpi, tegulæ, and dorsal crest in front fiery red, the tegulæ tipped with grey; pectus, femora, and tibiæ below fiery red; abdomen yellow tinged with red-brown, the crests red-brown. Fore wing purplish pink suffused with red-brown and striated with dark brown, the medial area below the cell deeper red-brown; a curved subbasal red-brown striga defined on outer side by whitish from costa; antemedial line brown defined on inner side by silvery-white, angled outwards below costa, retracted in cell, then oblique; orbicular oblique elliptical, defined by a curved silvery streak below; a large oblique golden stigma below the cell, rounded at extremity and with its inner edge indented at middle; some dark suffusion in upper end of cell; reniform defined by dark brown and with a silvery striga at lower inner extremity, oblique, its outer edge somewhat indented at middle; a dark line from lower angle of cell to inner margin, excurved round the stigma; postmedial line double, red-brown, strongly bent outwards below costa, then oblique, bent outwards below vein 2; subterminal line red-brown, excurved at vein 7 and slightly angled outwards below veins 4 and 3; a rather diffused red-brown line before termen from apex to vein 2; a fine brown terminal line. Hind wing yellowish suffused with red-brown, the veins and terminal area dark red-brown; a dark postmedial line; cilia reddish brown. Underside reddish yellow irrorated with brown; fore wing with the disk suffused with brown; both wings with dark postmedial line and subterminal shade.

Hab. W. China, Wa-shán (*Pratt*), 1 ♂, Pu-tsu-fang, 1 ♂ type. *Exp.* 44–48 millim.

8389. **Phytometra bractea.**

Noctua bractea, Schiff. Wien. Verz. p. 314 (1776); Fabr. Mant. Ins. ii. p. 161 (1787); Esp. Schmett. iv. pl. 110. f. 1; Hübn. Eur. Schmett., Noct. f. 279; Dup. Lép. Fr. vii. 2. p. 26, pl. 134. f. 1; Frr. Neue Beitr. pl. 47. f. 3; Steph. Ill. Brit. Ent., Haust. iii. p. 106; John, Rev. Russ. Ent. viii. p. 215, ff. 1, 2; Staud. Cat. Lep. pal. p. 237.
Noctua securis, Vill. Linn. Ent. pl. 5. f. 10 (1789).

Head and thorax purplish red-brown, the tegulæ tinged with fiery red and with some grey at tips; palpi fiery red; abdomen yellow tinged with fiery red, the crests red-brown. Fore wing purplish red-brown striated with dark brown, the medial area

below the cell chocolate-brown; orbicular hardly traceable except below where it is defined by a slight curved silvery streak, oblique elliptical; a large metallic golden stigma below the cell, its inner extremity angled inwards on median nervure and its lower extremity produced to a rounded lobe to near the postmedial line; reniform faintly defined by red-brown, its inner edge straight, its outer slightly indented at middle; postmedial line indistinctly double, red-brown, bent outwards below costa, then oblique, very slightly waved and excurved below vein 2; an oblique chocolate-brown shade from apex to below vein 5; subterminal line chocolate-brown, excurved below costa and angled outwards below veins 4 and 3; the termen pinkish with a fine brown terminal line; cilia with a fine pale line at middle. Hind wing yellowish suffused with red-brown, the terminal area red-brown; cilia yellowish tinged with red-brown. Underside yellow tinged with red; fore wing with the disk suffused with brown; hind wing irrorated with brown, a slight discoidal striga, diffused postmedial line, and faint subterminal shade.

Ab. 1. Fore wing with the stigma slightly produced at lower extremity.

Hab. Britain, Leech Coll.; France, Sand Coll.; Germany, Zeller and Frey Colls.; Austria; Hungary; Switzerland, Frey and Leech Colls.; Italy, Courmayeur (*Hampson*); Rumelia; Scandinavia; Russia, Leech Coll., St. Petersburg, Zeller Coll., Urals; Armenia; W. Turkestan, Issyk-Kul; W. Siberia, 1 ♂, Altai; E. Turkestan, Thian Shán. *Exp.* 40–50 millim.

Larva. Meyr. Brit. Lep. p. 157; Barrett, Lep. Brit. vi. p. 111, pl. 241. f. 3.

Pale green; dorsal and spiracular lines white; head marked with brown. Food-plants, *Eupatorium* and *Urtica*.

8390. **Phytometra metallica.** (Plate CCXXXIX. fig. 4.)

Plusia bractea, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 72 (1874), nec Schiff.
Plusia metallica, Grote, Bull. Buff. Soc. Nat. Sci. ii. p. 311 (1875); Ottolengui, J. N.Y. Ent. Soc. x. p. 63, pl. vii. f. 7; Smith, Cat. Noct. N. Am. p. 248.
Plusia scapularis, H. Edw. Papilio, ii. p. 127 (1882); Smith, Cat. Noct. N. Am. p. 253.
Plusia lenzii, French, Can. Ent. xxi. p. 161 (1889); Smith. Cat. Noct. N. Am. p. 253.

Head and thorax red-brown mixed with some grey; palpi, tegulæ at base, and thoracic crest in front bright rufous; pectus and legs rufous; abdomen yellowish tinged with rufous, the crests rufous tipped with grey. Fore wing purplish pink slightly striated with brown, the medial area below the cell chocolate-brown with some bright rufous beyond and below the stigma, the subterminal area with a golden gloss except at inner margin, the veins beyond the cell with slight dark streaks; antemedial line represented by an

oblique red-brown striga from costa and an obliquely curved line from cell to inner margin; orbicular represented by a minute golden streak above median nervure; an oblique golden stigma below the cell expanding into a rounded lobe at extremity; reniform faintly defined by brown, oblique and slightly constricted at middle; postmedial line indistinct, red-brown, excurved below costa, oblique to vein 2, then excurved; an oblique red-brown shade from apex and small rufous patch at tornus; a fine dark terminal line. Hind wing yellow suffused with red-brown especially on terminal area; cilia yellow tinged with rufous. Underside yellow irrorated with red-brown; fore wing with a large patch of brown suffusion beyond and below the cell from vein 4 to inner margin, the veins of terminal area streaked with brown.

Ab. 1. Fore wing with some gold scales on the ante- and postmedial lines towards inner margin, the stigma below the cell slightly angled inwards on inner margin and with more rufous below and beyond it.—Kaslo.

Hab. Canada, Br. Columbia, Kaslo (*Cockle*), 1 ♀; U.S.A., Washington, California, Mendocino, 1 ♂ type, Siskiyou. *Exp.* 40–42 millim.

8391. **Phytometra excelsa.** (Plate CCXXXIX. fig. 5.)

Plusia excelsa, Kretschmar, Berl. Ent. Zeit. vi. p. 135, pl. 1. f. 5 (1862); John, Rev. Russ. Ent. viii. p. 220. ff. 3, 4; Staud. Cat. Lep. pal. p. 237.
Plusia metabractea, Butl. Trans. Ent. Soc. 1881, p. 190.

Head and thorax purplish red-brown mixed with some grey, the palpi, tegulæ, and thoracic crest in front tinged with fiery red, the tegulæ grey at tips; pectus and legs ochreous tinged with red-brown, the pectus fiery red in front; abdomen yellow tinged with red-brown, the crests red-brown. Fore wing purplish grey suffused with red-brown and striated with dark brown, the medial area below the cell deep golden brown; subbasal line red-brown defined on outer side by whitish, angled inwards in cell and ending at vein 1; antemedial line brown defined on inner side by silvery-white, angled outwards below costa, retracted in cell, then oblique; orbicular oblique elliptical, defined below by a curved silvery streak; a large oblique silvery stigma below the cell, rounded at extremity; reniform with faint pale outline and its centre defined by some dark brown marks, a silvery striga at its lower inner extremity, somewhat constricted at middle; a dark line from lower angle of cell to inner margin excurved beyond the stigma; postmedial line double, dark brown, bent outwards below costa, then oblique and bent outwards below vein 2; an oblique chocolate-brown shade from apex to vein 4; subterminal line dark brown, excurved at vein 7 and angled outwards below veins 4 and 3; a fine dark terminal line. Hind wing yellow suffused with reddish brown, the veins and terminal area red-brown, an oblique brown postmedial line. Underside reddish yellow slightly irrorated with brown; fore wing with the disk

suffused with brown; both wings with postmedial line and faint subterminal shade.

Hab. Russia, St. Petersburg, Urals; W. Siberia, 1 ♀, Zeller Coll., Altai; E. Siberia, Amurland, 1 ♂, Ussuri; Japan, Tokio (*Maries*), 1 ♀ type *metabractea*; W. China, Nitou, 1 ♂. *Exp.* 42–50 millim.

8392. Phytometra æmula.

Noctua æmula, Schiff. Wien. Verz. p. 314 (1776); Hübn. Beitr. Schmett. ii. 2, p. 51, pl. 3. f. T (1791); id. Eur. Schmett., Noct. f. 280; Dup. Lép. Fr. vii. 2 p. 28, pl, 135. f. 2; John, Rev. Russ. Ent. viii. p. 223, ff. 5, 6; Staud. Cat. Lep. pal. p. 237.
Noctua lumina, Fabr. Mant. Ins. ii. p. 161 (1787).
Noctua chrysomelas, Borkh. Eur. Schmett. iv. p. 778 (1792).

Head and thorax red-brown mixed with grey, the tegulæ except at tips and the thoracic crest in front rufous; pectus and legs ochreous whitish tinged with rufous; abdomen ochreous white tinged with brown, the crests chocolate-brown and grey. Fore wing whitish tinged with red-brown and irrorated with chocolate-brown, the medial area below the cell deep chocolate-brown with some fulvous before the postmedial line, the veins beyond the cell with slight dark streaks, the terminal area whiter with a slight silvery gloss; a curved subbasal red-brown striga from costa defined on outer side by whitish; antemedial line represented by a double oblique red-brown striga filled in with whitish from costa and an oblique chocolate-brown line defined on outer side by silvery-white from cell to inner margin; orbicular represented by a minute silvery streak defined below by red-brown above median nervure; a large oblique silvery stigma below the cell, its extremity slightly bent outwards and produced to a rounded point; reniform with slight silvery annulus defined by chocolate-brown and its lower part filled in with chocolate-brown, narrow, oblique, its outer edge indented at middle; an oblique chocolate-brown shade from costa to the reniform; postmedial line double, chocolate-brown filled in with silvery-white towards inner margin, bent outwards below costa, excurved to vein 4, then incurved; subterminal line chocolate-brown, excurved below vein 7, slight and oblique below discal fold, a redder brown patch beyond it from just below costa to vein 6; a chocolate-brown terminal line. Hind wing whitish tinged with brown, the veins and terminal area suffused with brown; a dark brown terminal line; cilia yellowish white tinged with rufous. Underside yellowish white irrorated with brown; fore wing with the disk suffused with brown.

Ab. 1. Fore wing uniformly tinged with pinkish, the stigma below the cell with a faint golden tinge.—Carinthia.

Hab. Germany, Bavarian Alps; Austrian Alps, Zeller and Leech Colls., Carinthia, Frey Coll., Styria; Switzerland; Armenia, Langodecki. *Exp.* 38–40 millim.

8393. Phytometra argyrodonta. (Plate CCXXXIX. fig. 6.)

Plusia argyrodonta, Hmpsn. A. M. N. H. (8) v. p. 432 (1910).

♂. Head and thorax brown mixed with grey-white; abdomen ochreous. Fore wing grey suffused with cupreous brown and slightly striated with black; subbasal line represented by double curved black striæ from costa and oblique white striga from cell defined on each side by black, rather diffused on outer side; antemedial line double, black filled in with whitish, obsolete on costal half and oblique from cell to inner margin; the stigma below the cell oblique V-shaped, silvery-white filled in with brownish white, its inner arm sinuous; reniform defined at sides by silvery-white and black, constricted at middle and slightly angled inwards above median nervure; postmedial line double filled in with whitish, oblique from costa to submedian fold, then bent outwards, somewhat dentate towards costa; subterminal line slight, whitish defined on inner side by fuscous suffusion, slightly incurved at discal fold and angled outwards below veins 4 and 3; a faint whitish line before termen and fine black terminal line; cilia white, mixed with brown at tips. Hind wing pure white; a fine brown terminal line; the underside with the costal area slightly irrorated with brown, a discoidal point and postmedial series of minute streaks on the veins.

Hab. Natal, Maritzburg, 1 ♂ type. *Exp.* 40 millim.

*8394. Phytometra v-minus.

Plusia v-minus, Oberth. Ét. Ent. x. p. 27, pl. 3. f. 12 (1884); Staud. Cat. Lep. pal. p. 239.

♂. Head, thorax, and abdomen reddish brown mixed with grey; antennæ at base whitish with dark rings; pectus and legs mostly grey. Fore wing pale cupreous brown slightly irrorated with dark brown and mostly suffused with dark red-brown, the base greyish; subbasal line indistinct, pale, excurved and slightly defined on each side by brown from costa to median nervure, then with slight black bar on its inner side and ending at vein 1; antemedial line pale defined on each side by brown, diffused on outer side below costa and cell, excurved below costa, then incurved to median nervure, then obliquely excurved and not quite reaching inner margin; orbicular a small oblique V-shaped mark with brown centre and slight grey annulus, a small V-shaped silver mark below it, below the cell; reniform narrow with slight silvery annulus, open above, strongly constricted at middle and with slight black marks on its outer edge; a brown shade below the cell to postmedial line, an irregular oblique medial shade from costa to lower angle of cell; postmedial line pale defined on each side by brown, bent outwards below costa, oblique to vein 2, then nearly erect, with an oblique whitish shade beyond it from costa to vein 3; subterminal line

black-brown, defined on inner side by dark brown suffusion expanding into a patch at middle, slightly incurved below costa, then excurved, angled inwards at discal fold, excurved at middle and ending at tornus; a fine black terminal line curved inwards to costa and with whitish line on its inner side expanding into a patch towards tornus; cilia whitish with slight brown line near base on apical half and brownish tips. Hind wing ochreous white tinged with rufous, a diffused oblique postmedial line not reaching inner margin, the terminal area dark brown, broad at costa and narrowing to tornus; a fine dark terminal line; cilia white with brown tips towards apex; the underside whitish suffused and irrorated with rufous, diffused oblique medial and postmedial lines, the terminal area suffused with brown.

Hab. E. Siberia, Amurland, Pokrofka, in Coll. Püngeler, Ussuri. *Exp.* 36 millim.

8395. Phytometra tancrei. (Plate CCXXXIX. fig. 7.)

Plusia tancrei, Staud. Iris, viii. p. 328, pl. 6. f. 14 (1895); id. Cat. Lep. pal. p. 239.

♂. Head and thorax white mixed with pale brown; abdomen with the basal segments white with the crests brown and white, the terminal segments fuscous brown with the anal tuft white. Fore wing violaceous white tinged in parts with brown and irrorated with a few black scales, the medial area below the cell and the terminal area with a pale olive-golden gloss; a subbasal brown striga from costa defined on each side by white; antemedial line double, brown filled in with white, angled outwards below costa and inwards at median nervure, then excurved; orbicular an oblique brown bar defined by white; an oblique silvery V-shaped stigma below the cell filled in with white; reniform narrow with white annulus and its centre defined by brown, somewhat produced at upper extremity and angled inwards on median nervure; a rather diffused brown medial line, obliquely incurved to lower angle of cell, then oblique and sinuous; postmedial line double, brown filled in with white and defined on outer side by white, bent outwards below costa, then oblique, sinuous, some white points with brown between them beyond it on costa; subterminal line brown slightly defined on outer side by white towards costa and inner margin, excurved below vein 7 and at middle; a brown terminal line defined on inner side by a narrow violaceous white band except towards apex where it is reduced to a fine line incurved to costa; cilia white with a brown line near base and chequered with brown at tips. Hind wing grey-brown with a slight golden gloss; an indistinct oblique dark postmedial line and subterminal shade; cilia brown at base, white at tips; the underside white irrorated with brown, a medial brown shade, diffused postmedial line excurved below costa, then incurved and ending at tornus, and a subterminal shade.

Hab. Tibet, Kuku-Noor, Amdo, Sining, 1 ♂. *Exp.* 34 millim.

8396. Phytometra ochreata.

Plusia ochreata, Wlk. xxxiii. 839 (1865); Moore, Lep. Ceyl. iii, p. 72, pl. 151. f. 4; Hmpsn. Moths Ind. ii. p. 573.
Plusia cornucopiæ, Snell. Tijd. v. Ent. xxiii. p. 72, pl. 6. f. 3 (1880).

Head and thorax purplish brown mixed with some grey-white, the vertex of head, tegulæ, and thoracic crest in front tinged with fulvous; abdomen yellowish tinged with brown, the crests tipped with dark brown and white. Fore wing purplish suffused in parts and irrorated with red-brown, the terminal area suffused with golden cupreous except towards tornus; a subbasal rufous striga defined on outer side by silvery-white from costa; antemedial line fine, silvery-white defined on each side by rufous, angled outwards below costa, strongly incurved in cell, then oblique; orbicular defined by silvery-white, narrow, oblique elliptical; a narrow elongate oblique silvery-white V-shaped stigma below the cell extending to the postmedial line; reniform with slight white annulus, narrow, somewhat angled inwards on median nervure; postmedial line red-brown slightly defined on outer side by white, oblique to discal fold, then inwardly oblique and bent outwards below submedian fold, some white points beyond it on costa; subterminal line dark red-brown, excurved below vein 7, incurved and somewhat diffused on inner side at discal fold, and slightly angled outwards below veins 4 and 3. Hind wing purplish brown, the basal and costal areas yellowish white tinged with brown; the underside purplish grey thickly irrorated with brown, a slight brown postmedial line and diffused subterminal line.

Hab. Japan, Yokohama (*Pryer*), 1 ♂; Corea (*Leech*), 1 ♀; Hongkong (*J. J. Walker*), 1 ♂; Formosa, Takow (*Hobson*), 1 ♂; Punjab, Simla, Deyra Dhun, 1 ♂; Assam, Khásis, 1 ♂, Nágas; Bengal, Calcutta, 1 ♀; Madras, Nilgiris (*Hampson*), 2 ♂, 1 ♀; Travancore, Pirmád (*Mrs. Imray*), 1 ♀; Ceylon, ♂, 1 ♀ type; Penang (*Ridley*), 1 ♂; Johore (*Ridley*), 1 ♂; Singapore (*Ridley*), 3 ♂; Celebes; Queensland, Brisbane (*Turner*), 2 ♂. *Exp.* 24–28 millim.

8397. Phytometra transfixa. (Plate CCXXXIX. fig. 8.)

Abrostola transfixa, Wlk. xii. 884 (1857).
Habrostola commidendri, Wollast. A. M. N. H. (5) iii. p. 230 (1879).

Head and thorax brown mixed with grey, the tips of tegulæ and dorsum of thorax red-brown, the tegulæ with black medial line and the patagia with curved black line near base; tibiæ at extremities, the spurs and tarsi ringed with white; abdomen grey suffused with red-brown, the crests dark brown and grey, the ventral surface grey irrorated with brown. Fore wing purplish grey tinged with red-brown and striated with blackish; subbasal line double, brown and excurved from costa to a curved black line from base of subcostal nervure to vein 1, where it is met by an

oblique black line from the cell; antemedial line double, black, angled outwards below costa and at median nervure, then oblique and sinuous; orbicular with yellowish white outline and its centre defined by rufous, very narrow and oblique; a very narrow oblique and elongate yellowish white V-shaped stigma below the cell, extending to just beyond the postmedial line, its arms filled in with white; reniform defined by black, narrow, its inner edge slightly indented above and its upper extremity slightly produced; postmedial line double, brown, the outer line black towards inner margin, bent outwards below costa, then oblique and minutely waved to submedian fold, then excurved, some whitish points beyond it on costa; subterminal line fine, black, dentate, with black streaks before it below veins 5 and 4, and angled inwards at vein 2 and submedian fold; a waved black terminal line. Hind wing brown with a cupreous gloss, the interspaces of basal half whitish; cilia white with a series of brown spots; the underside white irrorated with brown, the costal and terminal areas greyish, a slight brown discoidal bar and rather diffused postmedial and subterminal lines.

Hab. St. Helena (*Wollaston*), 2 ♂, 3 ♀ type *commidendri*; Br. E. Africa, Eb Urru (*Betton*), 1 ♀, Machakos (*Crawshay*), 1 ♂, 1 ♀; Rhodesia, Bulawayo (*Marshall*), 2 ♀; Transvaal, Pretoria (*Distant*), 1 ♀, Johannesburg (*Distant*), 1 ♂, 1 ♀; Natal, Durban (*Gueinzius*), 1 ♂, 2 ♀ type; Mauritius, Curepipe (*Tulloch*), 1 ♀. *Exp.* 34–42 millim.

Larva. Green with fine partly confluent sinuous white subdorsal lines interrupted by the minute white warts, each with a dark hair; spiracular line narrow, yellowish white; head yellowish green sparsely dotted with black; two pairs of ventral claspers. Food-plant, *Commidendron robustum*. Pupates in a cocoon of white silk.

8398. **Phytometra arachnoides.** (Plate CCXXXIX. fig. 9.)

Plusia arachnoides, Dist. Entom. xxxiv. p. 285 (1901).

Head and thorax reddish brown mixed with grey-white, the tegulæ at middle and tips and the prothorax with white lines; abdomen whitish tinged with red-brown, ventrally irrorated with brown. Fore wing grey suffused with cupreous red-brown and slightly irrorated with dark brown, the veins streaked with white; antemedial line double, white, angled outwards on median nervure, then oblique; orbicular defined by silvery-white, narrow, oblique; an elongate oblique V-shaped silvery-white stigma below the cell with oblique white streak from below costa through the orbicular to between its arms; reniform slightly defined by white and strongly constricted at middle; postmedial line double, white, bent outwards below costa, obliquely curved to vein 4, then almost obsolete and incurved to vein 2 and angled inwards in submedian fold to below the V-shaped stigma and angled outwards on vein 1; subterminal line white, excurved to vein 4 where it is

angled inwards, angled outwards below veins 4, 3, 2 and ending at tornus; a fine white line before termen except towards tornus; cilia white with some dark brown scales. Hind wing with the basal half whitish, the veins tinged with brown, the terminal half brown; cilia white with a brown line through them; the underside white, the costal area irrorated with brown, the terminal area suffused with brown, a brown discoidal striga and oblique postmedial line.

Hab. Transvaal, Pretoria (*Distant*), 1 ♀ type, Johannesburg (*Cooke*), 1 ♂. *Exp.* 32–36 millim.

8399. Phytometra aranea.

Plusia aranea, Hmpsn. Trans. Zool. Soc. xix. p. 112, pl. iv. f. 20 (1909).

Head and thorax chocolate-brown mixed with grey-white; antennæ white, ringed with brown towards base; tarsi ringed with white; abdomen white tinged with brown, the crests dark brown and white. Fore wing glossy chocolate-brown thickly irrorated and striated with white and some blackish scales, the apical area from beyond the oblique white shade and down to vein 2 with less white; antemedial line fine, white, excurved to median nervure, then inwardly oblique; orbicular defined by white, narrow, oblique; the stigma below the cell fine, silvery-white, oblique elongate V-shaped, an oblique white shade from the antemedial line at subcostal nervure to between its arms; reniform with fine white outline, slightly angled inwards on median nervure and its outer edge indented at middle; postmedial line fine, white, bent outwards below costa, slightly incurved from below vein 7 to vein 3, then somewhat oblique, some white points beyond it on costa; the veins of terminal area with fine white streaks; subterminal line fine, white, minutely dentate, excurved below costa and angled outwards to near termen below veins 4 and 3; a fine white line just before termen; cilia white mixed with some brown and with a waved white line through them. Hind wing white tinged with brown, the veins and terminal half suffused with brown; cilia white with a brown line through them; the underside white irrorated with brown and with diffused postmedial and subterminal lines.

Hab. Uganda, Ruwenzori (*Wollaston*), 1 ♀ type; Transvaal, White R. (*Cooke*), 1 ♂. *Exp.* 30 millim.

8400. Phytometra tetrastigma. (Plate CCXXXIX. fig. 10.)

Plusia tetrastigma, Hmpsn. A. M. N. H. (8) v. p. 431 (1910).

♀. Head, thorax, and abdomen red-brown mixed with grey-white. Fore wing grey-brown irrorated and striated with dark brown, a large triangular patch of dark red-brown extending obliquely from apex below costa into the end of cell and down to vein 2; traces of a sinuous grey subbasal line from costa to vein 1 and of a sinuous grey antemedial line; an oblique silvery stigma

formed by a minute silver lunule above median nervure towards end of cell, a round spot below median nervure almost or quite touching an elliptical spot with another round spot below it; reniform faintly defined by grey and strongly constricted at middle; postmedial line very slight and indistinct, grey, sinuous, angled inwards in submedian fold below the silvery stigma; the veins of terminal area slightly streaked with grey; a fine waved grey subterminal line and fine waved grey line just before termen. Hind wing whitish suffused with reddish brown especially on terminal area; cilia whitish with a brown line through them; the underside whitish irrorated with brown, the terminal area suffused with brown, a brown discoidal lunule and faint subterminal shade.

Hab. Transvaal, White R. (*Cooke*), 1 ♀; Natal, Durban (*Bell-Marley*), 1 ♀ type. *Exp.* 34 millim.

8401. **Phytometra disticta**, n. sp. (Plate CCXXXIX. fig. 11.)

♀. Head and tegulæ pale red slightly irrorated with brown, the antennæ whitish tinged with brown; thorax pale red-brown mixed with whitish; abdomen whitish tinged with pale red-brown. Fore wing whitish tinged with pale red and striated with red-brown; antemedial line red-brown defined on inner side by whitish, angled outwards below costa, incurved and almost obsolete in cell, then oblique; two obliquely placed silver points defined by red-brown below the cell; a red-brown discoidal patch; a diffused red-brown medial line, oblique to the reniform and inwardly oblique below it; postmedial line red-brown, bent outwards and almost obsolete below costa, incurved below vein 4; subterminal line red-brown, excurved below vein 7, then oblique and angled outwards below veins 4 and 3; a fine waved red-brown terminal line. Hind wing whitish suffused and irrorated with pale red-brown; a fine red-brown terminal line; cilia white faintly tinged with red; the underside white tinged with pale red, a slight brownish discoidal lunule, indistinct diffused postmedial line, and diffused waved subterminal line.

Hab. Peru, Callao (*J. J. Walker*), 1 ♀ type. *Exp.* 36 millim.

8402. **Phytometra hampsoni.** (Plate CCXXXIX. fig. 12.)

Plusia hampsoni, Leech, Trans. Ent. Soc. 1900, p. 586.

♂. Head, thorax, and abdomen red-brown mixed with whitish and some black; palpi black-brown, the extremities of 1st and 2nd joints ochreous; frons with lateral black bars; tibiæ black-brown at base, the tarsi black-brown ringed with white; abdomen with the crests blackish at tips. Fore wing golden brown with a few black striæ; subbasal line white, sinuous, from costa to vein 1; antemedial line white, incurved in cell and angled outwards at median nervure, then oblique, sinuous; orbicular with whitish centre defined by black and white annulus, round; reniform blackish with grey-white annulus, elliptical; a small round white

spot defined by blackish at origin of vein 2; the orbicular and reniform with blackish bars above them from costa and the latter with oblique dark shade from it to inner margin; postmedial line white, slightly bent outwards below costa, then somewhat sinuous, excurved to vein 4, then incurved, a sinuous white shade beyond it and some black points on costa; subterminal line white, excurved to termen below vein 7 and to near termen at middle, ending at tornus, some black-brown beyond it at apex; a terminal series of small black lunules defined on inner side by white; cilia chequered dark brown and whitish. Hind wing fuscous brown; an indistinct dark postmedial line with slight greyish mark beyond it at tornus; cilia chequered whitish and brown; the underside ochreous white striated with dark brown, a blackish discoidal spot on an oblique dark shade, postmedial line strong, excurved and waved towards costa, a subterminal shade towards apex and a terminal series of minute black lunules.

Hab. W. China, Pu-tsu-fang, 1 ♂ type. *Exp.* 38 millim.

8403. Phytometra emichi.

Plusia emichi, Rghfr. Verh. zool.-bot. Ges. Wien, 1873, p. 569; Stndf. Rom. Mém. vi. p. 666, pl. 15. f. 5; Staud. Cat. Lep. pal. p. 236.
Plusia paulina, Staud. Iris, iv. p. 310 (1891); id. idem, v. pl. 2. f. 3.

Head and thorax rufous mixed with white; antennæ white, ringed with brown towards base; abdomen white tinged with rufous, the crests red-brown and white. Fore wing with the basal area pale yellow irrorated with pale red-brown and bounded by the white antemedial line, which is slightly angled outwards below costa then oblique; the rest of wing chestnut-brown sparsely irrorated with white; the stigmata defined by fine white lines, the orbicular small, oblique elliptical, the stigma below the cell large, oblique elliptical, the reniform slightly angled inwards on median nervure, its outer edge constricted at middle; postmedial line double, whitish, the outer line indistinct except at inner margin, angled outwards below costa, then oblique; faint traces of a sinuous subterminal line; a brown terminal line defined on inner side by white; cilia with a white line near tips. Hind wing whitish suffused with rufous; cilia white at tips; the underside white tinged with rufous.

Ab. 1. *paulina*. Smaller; fore wing browner and with the basal area brown, the white lines more distinct; hind wing browner with whitish medial band.—Palestine.

Hab. Armenia; Asia Minor, Taurus, 1 ♂, 1 ♀; Palestine. *Exp.* 26–32 millim.

8404. Phytometra dorsiflava.

Plusia dorsiflava, Stndf. Rom. Mém. vi. p. 666, pl. 15. f. 6 (1891); Staud. Cat. Lep. pal. p. 237.

♂. Head and thorax pale chestnut mixed with grey-white;

pectus and legs white; abdomen white slightly tinged with rufous, the crests with more rufous. Fore wing pale chestnut irrorated with white, more thickly on costal area, the inner area with yellowish white suffusion to the postmedial line, extending to the cell on antemedial area; subbasal line fine, white, curved, from costa to vein 1; orbicular defined by white, oblique elliptical; a round stigma defined by white below the cell; reniform with fine white outline, figure-of-eight-shaped; postmedial line indistinct, fine, white, excurved below costa and oblique below vein 4; an indistinct somewhat dentate white subterminal line; a brown terminal line; cilia white and rufous at tips. Hind wing ochreous suffused with pale chestnut; cilia white mixed with rufous; the underside white tinged with pale rufous.

Hab. Asia Minor; Mesopotamia, 1 ♂. *Exp.* 32 millim.

*8405. **Phytometra maria.** (Plate CCXXXIX. fig. 13.)

Plusia maria, Staud. Iris, iv. p. 311 (1891); id. Cat. Lep. pal. p. 236.

♂. Head and thorax rufous mixed with white; abdomen white tinged with rufous, the crests rufous tipped with white. Fore wing bright rufous irrorated with white, the veins and submedian fold slightly streaked with white; a broad inwardly oblique white antemedial band with yellowish shade at middle, its edges rather diffused; the stigmata defined by white, the orbicular rather elongate elliptical, the stigma below the cell oblique elliptical, the reniform constricted at middle; a broad oblique postmedial white band with yellowish shade at middle, its edges rather diffused; subterminal line slight, white, excurved to vein 4, then incurved; a fine white line just before termen; cilia with white line near tips. Hind wing ochreous white suffused with red-brown; a faint diffused whitish postmedial line; cilia white at tips; the underside white irrorated with red-brown, a red-brown postmedial shade.

Hab. Syria, Mardin; Palestine in Coll. Püngeler. *Exp.* 30 millim.

8406. **Phytometra augusta.** (Plate CCXXXIX. fig. 14.)

Plusia augusta, Staud. Iris, iv. p. 309, pl. 4. f. 5 (1891); id. Cat. Lep. pal. p. 236.

♀. Head and thorax white slightly mixed with pale brown; abdomen white tinged with brown. Fore wing very pale cupreous brown irrorated with white and with the veins white; subbasal line indistinct, fine, white, from costa to vein 1; an inwardly oblique white antemedial band, rather diffused on inner side; orbicular defined by white, small, oblique elliptical; a rather oblique elliptical stigma defined by white below the cell; reniform with fine white outline, strongly constricted at middle; an inwardly oblique white postmedial band with a slight brownish line at middle; a fine white line just before termen; cilia white and cupreous brown

at tips. Hind wing white suffused with pale cupreous brown except the costal area; an indistinct whitish postmedial line; cilia white with rufous line near base; the underside white tinged with brown, the terminal area suffused with brown.

Hab. KHURDISTAN; SYRIA, Antioch; MESOPOTAMIA, 1 ♀. *Exp.* 26 millim.

8407. Phytometra variabilis.

Noctua variabilis, Piller, Iter. Slav. Prov. p. 70, pl. 6. f. 3 (1783); Staud. Cat. Lep. pal. p. 236.
Noctua illustris, Fabr. Mant. Ins. ii. p. 164 (1787); Hübn. Eur. Schmett., Noct. f. 274; Frr. Beitr. pl. 65; Dup. Lép. Fr. vii. 2. p. 10, pl. 133. f. 1.
Noctua cuprea, Esp. Schmett. iv. p. 199, pl. 110. f. 4 (1787).
Plusia sergia, Oberth. Ét. Ent. x. p. 27, pl. 3. f. 9 (1884).
Plusia uralensis, Staud. Rom. Mém. vi. p. 538 (1892), nec Ev.
Plusia mongolica, Staud. Cat. Lep. pal. p. 236 (1901).

Head, thorax, and abdomen olive-brown mixed with grey-white; the tegulæ yellowish except at tips, which are white; patagia with oblique white line at middle and white tips. Fore wing olive-brown mixed with greyish, the veins slightly streaked with whitish; subbasal line whitish, obliquely curved, from costa to submedian fold; the base of inner margin pink; antemedial line whitish, angled outwards and rather diffused below costa, angled inwards on median nervure, then oblique defined on outer side by chocolate-brown and with a pink line before it; orbicular defined by silvery-white, oblique elliptical; the stigma below the cell defined by silvery-white, oblique conical; reniform with slight white outline, oblique, its outer edge indented at middle, some pink suffusion beyond it; a red-brown medial shade from costa to median nervure and a diffused oblique line from lower angle of cell to inner margin; postmedial line double, red-brown filled in with white, bent outwards below costa, then oblique and defined on outer side by pink, slightly incurved below vein 4; subterminal line white, defined on inner side by red-brown, curved, slightly excurved below submedian fold and with a golden-brown patch before it, some golden-brown beyond it at apex and middle; a white terminal line; cilia with a white line at middle. Hind wing pale purplish red-brown; cilia white at tips and with a slight whitish line at base. Underside pale yellow irrorated with brown; fore wing suffused with brown except the costal and terminal areas; hind wing with diffused brown postmedial line and subterminal shade.

Ab. 1. *sergia*. Fore wing with the ante- and postmedial lines filled in with pink except at costa, the medial area suffused with pink below and beyond the cell.—Germany; E. Siberia.

Ab. 2. *mongolica*. Smaller and paler; fore wing with hardly any pink.—Carinthia, Urga.

Hab. S. BRITAIN; IRELAND; FRANCE, Leech Coll., Pyrenees; S. GERMANY, Zeller and Leech Colls; AUSTRIA, Carinthia, Zeller Coll.; HUNGARY, Leech Coll.; SWITZERLAND, Zeller, Frey, and Leech Colls.; ITALY; RUMELIA; FINLAND; RUSSIA, St. Petersburg,

Urals; Armenia; Mongolia, Urga; E. Siberia, Amurland, Ussuri. *Exp.* 34–46 millim.

Larva. Barrett, Lep. Brit. vi. p. 108; Kirby, Butt. & Moths Eur. p. 269; Hffm. Raup. p. 133, pl. 35. f. 6.

Green with a broad dorsal dark stripe and lateral stripe. Food-plant, *Aconitum lycoctonum*. 5–7.

8408. Phytometra modesta.

Noctua modesta, Hübn. Beitr. Schmett. i. p. 3, pl. 1. f. A (1786); id. Eur. Schmett., Noct. f. 354; Dup. Lép. Fr. vii. 2. p. 13, pl. 133. f. 2; Frr. Neue Beitr. pl. 424; Friv. Magyar. Tudom. Akad. Evkon. xi. iv. pl. 7. f. 7 (1866); Staud. Cat. Lep. pal. p. 236.
Noctua cuprea, Esp. Schmett. iv. p. 199, pl. 110. f. 3 (1787).
Plusia viridis, Staud. Cat. Lep. pal. p. 236 (1901).

Head and thorax brown mixed with grey-white; tegulæ ochreous at base and with white tips; prothorax with a white line; fore tibiæ rufous in front; abdomen whitish tinged with red-brown, the crests rufous tipped with white, the ventral surface white. Fore wing olive-brown mixed with grey-white, the veins finely streaked with white, the medial area suffused with purplish red-brown except the outer half below vein 4; subbasal line white, oblique, from costa to vein 1; antemedial line double, silvery-white, angled outwards below costa and inwards at median nervure, then oblique and defined on outer side by chocolate-brown; orbicular and the stigma below the cell defined by silvery-white, oblique elliptical; reniform chocolate-brown slightly defined by white, small and almost interrupted at middle; an oblique whitish line from lower angle of cell to inner margin; postmedial line double, bent outwards and almost obsolete below costa, then white, oblique and slightly incurved below vein 4; subterminal line white, slightly curved, ending at tornus, a golden-brown patch before it at inner margin and some golden-brown beyond it at apex and middle; a white terminal line; cilia with a white line at middle. Hind wing pale purplish red-brown; cilia white at tips. Underside ochreous; fore wing suffused with brown except costal area; hind wing irrorated with brown, a diffused postmedial line and subterminal shade.

Ab. 1. *viridis*. Paler and greener; fore wing with hardly any red-brown shades.—Asia Minor; Syria.

Hab. France, Paris; Germany, Zeller Coll.; Austria; Hungary, Leech Coll.; Switzerland, Frey Coll.; Russia, Urals; Armenia; Asia Minor, Taurus; Syria, 3 ♀; W. Turkestan, Ala Tau; E. Siberia, Dahuria, Ussuri. *Exp.* 30–40 millim

Larva. Kirby, Butt. & Moths Eur. p. 268; Hffm. Raup. p. 133, pl. 35. f. 7.

Pale bluish grey irrorated with black and white. Food-plant, *Pulmonaria officinalis*. 5–6.

8409. Phytometra uralensis.

Plusia uralensis, Ev. Bull. Mosc. 1842, iii. p. 553, & 1857, i. p. 106; Dup. Lép. Fr., Suppl. iv. p. 522, pl. 90. f. 3; Herr.-Schäff. Eur. Schmett. ii. p. 400, Noct. f. 268; Staud. Cat. Lep. pal. p. 236.
Plusia uraliensis, Frr. Neue Beitr. v. p. 11, pl. 389. f. 4 (1842).

♂. Head, tegulæ, prothorax, and base of patagia pale rufous, the rest of thorax brownish grey, the tegulæ at tips and an oblique line across patagia brownish grey; pectus in front pale rufous; abdomen brownish white, the crests rufous except at tips. Fore wing pale brownish grey, the medial area except beyond the cell, the postmedial area towards inner margin, and the terminal area towards apex and at middle golden-rufous; antemedial line silvery-white, angled outward below costa and obliquely curved below the cell; the stigmata brownish grey with silvery-white annuli, the orbicular oblique elliptical, the stigma below the cell oblique V-shaped, the reniform slightly constricted at middle and angled inwards on median nervure, the area beyond it tinged with pink; postmedial line double, red-brown filled in with silvery-white, excurved to vein 4, then obliquely incurved, the area beyond it tinged with pink; subterminal line silvery-white defined on inner side by red-brown, curved to submedian fold, then excurved to tornus; a silvery-white terminal line; cilia with fine red-brown and whitish lines. Hind wing whitish tinged with red-brown, the terminal area rather browner, an indistinct brown postmedial line; the underside whiter, a slight brown discoidal lunule.

Hab. Russia, Urals, 1 ♂, Zeller Coll. *Exp.* 40 millim.

8410. Phytometra siderifera.

Plusia siderifera, Ev. Bull. Mosc. 1856, i. pl. 3. f. 4, & 1857, i. p. 104.
Plusia beckeri, Staud. Stett. Ent. Zeit. 1861, p. 288; Mill. Icones. ii. p. 175, pl. 70. f. 1; Staud. Cat. Lep. pal. p. 236.
Plusia italica, Staud. Ent. Nachr. viii. p. 293 (1882); Calb. Iris, i. p. 258, pl. 12. ff. 4, 5.
Plusia calberlæ, Stndf. Stett. Ent. Zeit. 1884, p. 199.

Head and thorax fulvous red mixed with yellowish; the tegulæ, patagia, and thoracic crests at tips white; abdomen white tinged with fulvous red, the crests fulvous red tipped with white, the anal tuft fulvous red. Fore wing fulvous red, the basal area paler and irrorated with white; subbasal line white, oblique, from costa to vein 1; antemedial line double, silvery-white, angled outwards below costa and inwards on median nervure, then oblique and slightly angled outwards at vein 1; orbicular with pale rufous centre and silvery-white annulus, oblique elliptical; an oblique silvery-white U-shaped stigma below the cell filled in with chocolate-brown; reniform chocolate-brown with slight white annulus, strongly constricted at middle; postmedial line double, silvery-white, obliquely excurved from costa to vein 4, then incurved, obscured by fulvous red between veins 4 and 3; subterminal line silvery-white, obliquely curved from costa to vein 2, then excurved

to tornus and with a cupreous red patch before it, a cupreous red patch beyond it at middle; a fine violaceous white line just before termen; cilia deeper fulvous red at apex, middle, and tornus. Hind wing yellowish tinged with red, especially on terminal area; cilia with a fine pale line at base and whitish tips; the underside yellow.

Ab. *italica*. Fore wing slightly paler; hind wing yellow.

Hab. Italy, Gran Sasso; Russia, Sarepta, Zeller, Frey, Leech, and D'Emmich Colls.; Asia Minor, Pontus, Taurus; W. Turkestan, Ala Tau. *Exp.* 32–34 millim.

Larva. Kirby, Butt. & Moths Eur p. 268; Hffm. Raup. p. 133.

Bluish green variegated with yellowish. Food-plant, *Rindera tritaspis*.

*8411. **Phytometra inconspicua.** (Plate CCXXXIX. fig. 15.)

Plusia inconspicua, Græser, Berl. Ent. Zeit. xxxviii. p. 315 (1892); John, Hor. Soc. Ent. Ross. xxxix. p. 253, pl. xiv. f. 23; Staud. Cat. Lep. pal. p. 236.

Head pale rufous; tegulæ pale rufous, whitish at tips; thorax brownish white, the patagia at base and metathoracic crest at sides pale rufous; pectus pale rufous and white; legs whitish irrorated with brown; abdomen whitish suffused with brown, the crests and anal tuft pale rufous. Fore wing whitish tinged with olive-brown, the medial area rufous; a curved subbasal white striga from costa; antemedial line white, angled outwards below costa and inwards in cell, then oblique; orbicular defined by red-brown, rounded; a rather reniform stigma defined by red-brown below the cell; reniform defined by red-brown, oblique, oblong; postmedial line white, slightly angled outwards below costa, oblique to vein 4, then incurved; subterminal line white defined on inner side by pale brown and with rufous patch before it on inner area, slightly excurved to vein 3, then incurved; a brown terminal line; cilia rufous. Hind wing reddish brown, the cilia rufous; the underside white tinged with brown, a diffused brown postmedial line and faint subterminal shade.

Hab. W. Turkestan, Issyk-Kul in Coll. Püngeler, Alexander Mts. *Exp.* 42 millim.

*8412. **Phytometra generosa.**

Plusia generosa, Staud. Iris, xii. p. 380, pl. 6. f. 8 (1900); id. Cat. Lep. pal. p. 236.

♂. Head and thorax yellow-brown; palpi, pectus, legs, and abdomen grey-brown. Fore wing pale red-brown, the area from before the antemedial to the medial line and the terminal area olive-brown, with a golden gloss beyond the middle; subbasal line double, brownish, from costa to vein 1; antemedial line double, brown, slightly excurved below costa and submedian fold; orbicular defined by brown, round; the stigma below the cell defined by brown, elliptical; reniform very faintly defined and with an olive-

brown patch beyond it before the postmedial line; medial line brown, excurved at median nervure, then oblique; postmedial line double, brown filled in with olive, slightly excurved from costa to vein 4, then incurved; subterminal line brown defined on inner side by pale red-brown suffusion, slightly excurved at middle; the veins of terminal area with slight dark streaks; a brown terminal line; cilia chequered brown and olive. Hind wing ochreous suffused with brown especially on terminal half, an indistinct postmedial line; cilia ochreous; the underside yellow with large discoidal spot, postmedial and subterminal lines, and dark terminal line.

Hab. Asia Minor, Taurus, Zeitun. *Exp.* 38 millim. This species is unknown to me.

8413. **Phytometra cashmirensis.** (Plate CCXXXIX. fig. 16.)

Euchalcia cashmirensis, Moore, P. Z. S. 1881, p. 376; Hmpsn. Moths Ind. ii. p. 575; Staud. Cat. Lep. pal. p. 236.

♂. Head and thorax whitish tinged with olive-brown, the tegulæ with red-brown line near tips, the patagia and metathorax suffused with red-brown; antennæ rufous; abdomen whitish suffused with rufous. Fore wing olive-white, tinged with rufous especially on medial area and irrorated with dark brown; an indistinct whitish subbasal line from costa to vein 1; antemedial line whitish, angled outwards below costa, incurved in cell, then oblique and slightly excurved at vein 1; stigmata defined by whitish, the orbicular oblique elliptical, the stigma below the cell U-shaped, the reniform oblique, some deeper red-brown between orbicular and reniform; postmedial line whitish slightly defined on each side by brown, oblique to vein 4, then incurved; subterminal line whitish, very slightly excurved below costa and incurved below vein 4, ending at tornus, a slight fulvous mark before it at inner margin; a fine whitish line at base of cilia. Hind wing red-brown; cilia with a whitish line at base; the underside yellowish white, the costa and inner margin tinged with rufous, a slight dark discoidal lunule and diffused postmedial line except towards costa.

Hab. Kashmir, Barra Larcha (*McArthur*), 3 ♂, Goorais Valley (*Leech*), 1 ♂. *Exp.* 32 millim.

8414. **Phytometra herrichi.**

Plusia renardi, Led. Verh. zool.-bot. Ges. Wien, v. p. 112 (1855); Herr.-Schäff. Neue Schmett. p. 26, f. 128 (nec Ev.).
Plusia uralensis, Bellier, Ann. Soc. Ent. Fr. 1859, p. 192, pl. 5. ff. 7, 8 (nec Ev.).
Plusia herrichi, Staud. Stett. Ent. Zeit. 1861, p. 288; id. Cat. Lep. pal. p. 236.
Plusia eversmanni, Staud. Iris, ix. p. 372, pl. 4. f. 6 (1896).
Plusia bellieri, Kirby, Butt. & Moths Eur. p. 269 (1900).

♀. Head and thorax pale rufous; abdomen grey tinged with brown, the crests pale rufous. Fore wing pale brownish grey, the

medial area, the postmedial area towards inner margin, and the terminal area towards apex and at middle golden-rufous, the inner area towards inner margin and the areas beyond the reniform and the postmedial line tinged with pink; subbasal line white defined on inner side by rufous, from costa to vein 1; antemedial line silvery-white, angled outwards below costa and obliquely curved below the cell; orbicular with silvery-white annulus, round; a U-shaped silvery-white stigma below the cell; reniform slightly defined by silvery-white and somewhat constricted at middle; postmedial line rufous filled in with white, excurved to vein 4, then incurved; subterminal line white, curved, erect towards tornus; a fine brown terminal line with a white line before it; cilia white and brown. Hind wing whitish suffused with purplish brown, the basal and costal areas whiter; a brown postmedial line with a whitish band beyond it; a fine brown terminal line with a whitish line before it; cilia white tinged with brown; the underside white tinged with rufous, a slight brown discoidal striga, rather diffused postmedial line, a faint subterminal shade.

Ab. 1. *eversmanni*. Paler; fore wing with hardly any rufous or pink suffusion.

Ab. 2. *bellieri*. Fore wing with the stigma below the cell more rounded.—Basses Alpes.

Hab. S.E. France, Alps; Armenia; W. Turkestan, Saraws-chan, Issyk-Kul, Ala Tau; W. Siberia, Altai; E. Turkestan, Ili; Mongolia, Urga; E. Siberia, Dahuria, Kentei, 1 ♀. *Exp.* 34 millim.

8415. Phytometra renardi. (Plate CCXXXIX. fig. 17.)

Plusia renardi, Ev. Bull. Mosc. 1844, iii. p. 595, pl. 15. ff. 2 *a*, *b*, & 1857, i. p. 107; Staud. Cat. Lep. pal. p. 236.

♀. Head and thorax whitish suffused with pale rufous; pectus and legs whitish; abdomen whitish tinged with brown, the crests pale rufous. Fore wing white tinged with pink, the medial area except its outer part from costa to vein 4, the postmedial area towards inner margin, and the terminal area towards apex and at middle golden-rufous, the outer part of postmedial area and the rest of terminal area browner; subbasal line whitish defined on inner side by rufous, from costa to vein 1; antemedial line whitish, angled outwards below costa, then oblique; orbicular with silvery-white annulus, round; a silvery-white U-shaped stigma below the cell; reniform with faint pale annulus, its lower part defined by silvery-white, very narrow and strongly constricted at middle; postmedial line double, red-brown filled in with pinkish white, slightly angled outwards below costa, then oblique and very slightly incurved below vein 4; subterminal line white, curved, erect from vein 2 to tornus; a fine brown terminal line defined on inner side by a white line; cilia white slightly mixed with brown. Hind wing whitish suffused with golden brown, the terminal area browner, a rather diffused brown postmedial line; a fine brown terminal line

defined on inner side by a white line; cilia white; the underside white tinged with brown, the postmedial line more distinct and curved, a faint subterminal shade.

Hab. Mongolia, Urga, 1 ♀; E. Siberia, Dahuria. *Exp.* 30 millim.

8416. Phytometra consona.

Noctua consona, Fabr. Mant. Ins. ii. p. 163 (1787); Hübn. Beitr. Schmett. iii. p. 15, pl. 2. f. K; id. Eur. Schmett., Noct. f. 273; Dup. Lép. Fr. vii. 2. p. 15, pl. 133. f. 3; Frr. Neue Beitr. iii. pl. 214; Staud. Cat. Lep. pal. p. 236.

Head and thorax brown mixed with grey, the head darker; antennæ white; tegulæ ochreous at base and with white tips; patagia with white lines at middle and tips; pectus and legs whitish suffused with red-brown; abdomen whitish tinged with red-brown, the crests chocolate-brown. Fore wing olive-brown mixed with grey-white, the basal half of medial area suffused with chocolate-brown, the veins of terminal area slightly streaked with whitish; a slight oblique white subbasal line from costa to vein 1; antemedial line double, silvery-white, indistinct towards costa, angled outwards below costa and inwards on median nervure, then oblique and the outer line produced to a slight streak on vein 1; orbicular defined at sides by silvery-white, narrow, oblique and rather sinuous; a **U**-shaped silvery-white stigma below the cell; reniform with very slight silvery annulus, oblique and very strongly constricted at middle; postmedial line double, silvery-whitish, arising close to the subterminal line, slightly excurved below costa, incurved below discal fold; subterminal line silvery-whitish, incurved below vein 6 and ending at tornus, a chocolate-red patch before it at inner margin, a chocolate-red patch beyond it at mindle intersected by a short white streak on vein 4, veins 3 and 2 also with white streaks; cilia with a fine whitish line towards tips. Hind wing ochreous white suffused with brown especially on terminal area; an indistinct brown postmedial line defined on outer side by whitish; an indistinct sinuous whitish subterminal line ending on termen at submedian fold; a fine whitish terminal line; cilia white tinged with rufous and with a series of brown spots at base; the underside ochreous, a slight brown discoidal point, oblique diffused postmedial line, and traces of a subterminal shade.

Hab. Germany, Saxony, Zeller, Leech, and Sand Colls.; Austria, Tirol, Frey Coll.; Hungary; Bulgaria; S. Russia; Armenia; Asia Minor, Pontus, Taurus. *Exp.* 28–38 millim.

Larva. Kirby, Butt. & Moths Eur. p. 268; Hffm. Raup. p. 133, pl. 35. f. 5.

Green, the subdorsal area whitish, a whitish lateral stripe; head brown. Food-plant, *Lycopsis pulla*. 5, 7, 8.

8417. **Phytometra albavitta.** (Plate CCXXXIX. fig. 18.)

Antographa albavitta, Ottolengui, J. N.Y. Ent. Soc. x. p. 75, pl. viii. f. 8 (1902); Dyar, Cat. Lep. N. Am. p. 200.
Behrensia hutsonii, Smith, Psyche, xi p. 60 (1904).

♂. Head, thorax, and abdomen white slightly mixed with reddish brown. Fore wing white suffused with pale rufous especially on medial and postmedial areas, and with slight black irroration; subbasal line represented by a slight black spot below costa; antemedial line blackish defined by white on inner side, the black obsolete on costal area and the white strongly bent outwards, excurved from costal nervure to above inner margin where it is incurved, and with small black spot before it; a **U**-shaped white mark below middle of cell; orbiculaar and reniform small, defined by white, the former oblique **V**-shaped, open above, the latter narrow, the area between them rather darker; postmedial line indistinct, brownish defined by white on outer side, excurved below costa, then incurved, excurved at vein 4, then strongly incurved, a dark-irrorated mark beyond it at lower angle of cell; subterminal line white, strong, excurved to vein 6, then incurved, two rufous spots beyond it between veins 5 and 3; a slight brown terminal line; cilia white with some dark irroration beyond the rufous spots. Hind wing white suffused with pale brown; a slight brown terminal line; cilia whitish; the underside with indistinct curved medial line.

Hab. U.S.A., Middle California, San Diego, Arizona, Yuma Co., type † ♂ *hutsonii* in Coll. J. B. Smith. *Exp.* 30 millim.

8418. **Phytometra ampla.** (Plate CCXXXIX. fig. 19.)

Plusia ampla, Wlk. xii. p. 910 (1857); Ottolengui, J. N.Y. Ent. Soc. x. p. 73, pl. vii. f. 6.
Plusia alterna, Streck. Proc. Ac. Nat. Sci. Phil. 1886, p. 178; Smith, Cat. Noct. N. Am. p, 257.

Head and thorax grey mixed with brown; tegulæ tinged with rufous at base and with two dark lines near tips; mesothorax with a dark line; the thoracic crest rufous at tip, the metathorax chocolate-brown; tarsi dark brown ringed with white; abdomen grey-brown, the crests chocolate-brown. Fore wing grey tinged with brown and irrorated with a few black scales, the medial area below the cell chocolate red-brown to submedian fold then dark brown to inner margin; a curved black subbasal striga from costa; antemedial line black-brown, angled outwards below costa, retracted in cell, then obliquely curved; orbicular faintly defined by silvery-whitish and the upper edge of centre by dark scales, slightly constricted at middle; an oblique silvery **U**-shaped stigma below the cell, filled in with grey defined by some dark scales, its inner arm angled inwards on median nervure; reniform with slight silvery annulus defined at sides by black, narrow, oblique, its outer edge indented at middle; postmedial line black-brown defined on outer side by grey, angled inwards below costa, then slightly bent out-

wards, then oblique and sinuous to lower angle of cell, then obliquely incurved, slightly angled inwards at vein 2 and to inner margin which it reaches close to the subterminal line, some pale points beyond it on costa; subterminal line grey defined on inner side by brown, rather strongly towards costa, then slightly, incurved below costa, then dentate, a black mark before it at inner margin and some dark suffusion at apex. Hind wing reddish brown, the cilia chequered whitish and brown; the underside whitish tinged and irrorated with reddish brown, a dark discoidal striga, diffused postmedial line, and subterminal shade.

Hab. Canada, Hudson's Bay, Albany R., St. Martin's Falls (*Barnston*), 1 ♀ type, Ontario, Orillia (*Bush*), 1 ♀, Alberta, Calgary (*Wolley-Dod*), 1 ♂, 1 ♀, High R. (*Baird*), 2 ♂, 1 ♀, Br. Columbia, Kaslo (*Cockle*), 1 ♂; U.S.A., Northern and Eastern States, Maine, Orono, 1 ♀, N. York, Albany (*Hill*), 1 ♂. *Exp.* 38–46 millim.

8419. **Phytometra deaurata.**

Noctua deaurata, Esp. Schmett. iv. pl. 110. f. 6 (1787); Dup. Lép. Fr. vii. 2. p. 60, pl. 139. f. 1; Frr. Neue Beitr. pl. 196; Herr.-Schäff. Eur. Schmett., Noct. f. 207; Staud. Cat. Lep. pal. p. 235.
Noctua chryson, Borkh. Eur. Schmett. iv. p. 765 (1792).
Noctua aurea, Hübn. Eur. Schmett., Noct. f. 288 (1802),
Plusia semiargentea, Alph. Rom. Mém. v. p. 179 (1889).

Head and thorax bright rufous mixed with yellow; abdomen ochreous white tinged with rufous, the crests red-brown at tips. Fore wing bright rufous suffused with metallic gold especially on medial area and apical part of costal area; subbasal line double, rufous filled in and defined on outer side by gold, sinuous, from costa to submedian fold; antemedial line red-brown, angled outwards below costa, inwards at median nervure, outwards in submedian fold, then oblique; orbicular and reniform slightly defined by rufous, the former small, rounded, the latter strongly constricted at middle, a small **U**-shaped stigma below the cell faintly defined by rufous; a faint rufous medial line, angled inwards below costa, outwards to lower angle of cell, then oblique, sinuous; a faint oblique rufous streak beyond upper angle of cell and faint rufous streaks on the veins beyond the cell; postmedial line very oblique rufous and indistinct from costa to vein 7 below apex, then double, the inner line red-brown, the outer blackish oblique and slightly sinuous to inner margin; subterminal line reddish brown, arising below apex, closely approximated to the postmedial line, with dark points beyond it below veins 4 and 3 and a red-brown shade from it at vein 2 to tornus with some gold before it on inner margin; a fine red-brown terminal line. Hind wing whitish suffused with red-brown, the terminal area darker red-brown; cilia whitish tinged with rufous; the underside paler, a rather diffused sinuous postmedial red-brown line.

Ab. 1. *semiargentea*. Fore wing somewhat paler golden; hind wing darker.—Bokhara.

Hab. Germany, Silesia; Austria, Zeller Coll., Tirol, Meran (*Mann*), Carniola; Hungary; Switzerland, Frey and Leech Colls.; Spain, Leech Coll., Andalusia; Italy; S. Russia, Zeller Coll.; W. Turkestan, Bokhara; W. Siberia, Altai. *Exp.* 38–44 millim.

Larva. Kirby, Butt, & Moths Eur. p, 268; Hffm. Raup. p. 132.

Humped; green with dark green lateral stripes defined by white; somites 1–4 with subdorsal white bars, the other somites with dark green lunules defined by white. Food-plant, *Thalictrum flavum*. 5–6.

8420. **Phytometra ærecides.** (Plate CCXXXIX. fig. 20.)

Plusia æreoides, Grote, Proc. Ent. Soc. Phil. iii. pp. 83, 541, pl. 2. f. 5 (1864); Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f, 3; Smith, Cat. Noct. N. Am. p. 247.

Head and thorax pale rufous; tegulæ brown and white at tips, the patagia with oblique brown and white line across them and the area beyond it brown and white, the dorsal crest brown and white behind; abdomen grey tinged with rufous, the crests red-brown and white at tips. Fore wing violaceous pink tinged and irrorated with rufous, the veins slightly streaked with brown; subbasal line red-brown, from costa to vein 1, a red-brown shade beyond it; antemedial line red-brown, inwardly oblique, slightly excurved below costa and in submedian interspace; the stigma below the cell defined by red-brown, oblong and rather inwardly oblique; reniform defined by red-brown, constricted at middle; postmedial line red-brown, bent outwards below costa, then with silvery-whitish band on its inner side, inwardly oblique and slightly excurved at middle; subterminal line rufous, oblique from apex to discal fold and angled outwards below veins 4 and 3; a fine dark terminal line. Hind wing whitish suffused with brown; an indistinct curved postmedial line; a fine dark terminal line defined on inner side by white from apex to vein 2; cilia whitish, intersected with brown at the veins. Underside whitish irrorated with brown; fore wing with the disk suffused with dark brown; hind wing with dark brown discoidal lunule, sinuous postmedial line and subterminal line diffused in submedian interspace.

Hab. Canada, Renfrew Co., 4 ♂, Ottawa (*Gibson*), 3 ♂, Ontario, Orillia (*Bush*), 1 ♂, Alberta, Calgary (*Wolley-Dod*), 2 ♂, 2 ♀, High R. (*Baird*), 1 ♂, Vancouver I., Cowichan Bay (*Livingstone*), 1 ♂, 1 ♀; U.S.A., south to Texas and west to Colorado, New York (*Doubleday*, *Packard*, *Scudder*), 3 ♂, 2 ♀, Trenton Falls (*Doubleday*), 1 ♂, 1 ♀, Evans Center (*Grote*), 2 ♂, 1 ♀. *Exp.* 36–42 millim.

Larva. Thaxter, Psyche, i p. 188.

Pale green marked with greenish white, humped; semilooper spins a white cocoon. Food-plant, *Spiræa salicifolia*.

Pupa. Pale green with large black patches on back.

8421. Phytometra masoni.

Plusia masoni, Schaus, Trans. Am. Ent. Soc. xxi. p. 238 (1894); Druce, Biol. Centr.-Am., Het. ii. p. 504, pl. 96. f. 12.

♂. Head and thorax chocolate-brown mixed with grey-white; tarsi brown ringed with white; abdomen reddish brown tinged with grey, the crests dark brown and grey at tips. Fore wing chocolate-brown thickly irrorated with grey-white; antemedial line grey-white, angled outwards below costa, incurved in cell, then stronger and inwardly oblique; the stigmata defined by fine grey-white lines, the orbicular narrow and oblique, the stigma below the cell bilobate, its outer edge angled inwards on vein 2 and its upper part extending to lower angle of cell; the reniform with its upper and lower parts produced to points, its outer edge strongly angled inwards at middle; postmedial line grey-white, bent outwards below costa, then oblique, very slightly sinuous, and slightly excurved below vein 2, defined on outer side by a narrow grey-white band arising from apex; the veins of terminal half with slight whitish streaks; a fine slightly waved whitish subterminal line and a fine crenulate line just before termen. Hind wing red-brown, the cell and area just below and beyond it whitish; cilia white with a red-brown line near base; hind wing whitish, the costal and terminal areas irrorated with red-brown, a brownish discoidal striga and diffused postmedial and subterminal lines.

Hab. Mexico, Jalapa (*Trujillo*), 6 ♂, Godman-Salvin Coll. *Exp.* 40 millim.

8422. Phytometra peponis.

Noctua peponis, Fabr. Syst. Ent. p. 608 (1775).
Plusia agramma, Guen. Noct. ii. p. 327 (1852); Moore, Lep. Ceyl. iii. p. 72, pl. 152. ff. 3, 3 *a*; Hmpsn. Moths Ind. ii. p. 574; Staud. Cat. Lep. pal. p. 239.
Plusia inchoata, Wlk. xxxiii. 841 (1865).
Plusia fumifera, Græser, Berl. Ent. Zeit. xxxiii. p. 263 (1889).

Head and thorax grey mixed with brown, the tegulæ and dorsal crest in front tinged with red, the former with grey tips; abdomen grey tinged with brown. Fore wing grey suffused with brown, the terminal area with a cupreous tinge except towards tornus; subbasal line brown faintly defined on outer side by whitish, from costa to submedian fold, a patch of brown suffusion beyond it; antemedial line very indistinct, double, brown filled in with grey, angled outwards below costa, incurved in cell, then oblique, a dark brown shade beyond it below the cell extending below vein 2 to the postmedial line; orbicular hardly traceable, with faint pale annulus, round; reniform with faint pale annulus and slight dark marks in upper and lower parts, narrow; postmedial line very indistinctly double, brown, bent outwards below costa, then oblique and slightly sinuous to submedian fold,

then erect; subterminal line very indistinct, dark, excurved below vein 7 and at middle and incurved below vein 3; a narrow pale terminal band beyond the cupreous suffusion except at apex. Hind wing greyish suffused with red-brown, the terminal area darker; cilia with a fine pale line at base; the underside grey irrorated with brown, a brown discoidal striga and diffused postmedial and subterminal lines with a brown band between them except towards costa, the subterminal line angled outwards at vein 5.

Hab. E. Siberia, Ussuri, type † ♀ *fumifera* in Coll. Püngeler; Japan, Tokio (*Maries*), 1 ♀, Yokohama (*Jonas*, *Pryer*), 1 ♂, 3 ♀, Kiushiu, 1 ♂; Sikhim; Assam (*Badgley*), 1 ♂; Bengal, Pusa (*Lefroy*), 1 ♂; Bombay, Kanara (*Ward*), 1 ♂; Ceylon (*Templeton*), 1 ♂; Andamans, 1 ♂; Java (*Horsfield*), 4 ♂, 3 ♀ type *agramma*; Queensland, Moreton Bay (*Damel*, *Diggles*), 2 ♀ type *inchoata*. *Exp.* 42–52 millim.

Larva green with lateral black spots, some short pointed black dorsal spines, stoutest on 4th, 5th, 6th, 7th, and 11th somites; a prominent white subdorsal and waved lateral line. Food-plants, *Cucurbitaceæ*.

8423. Phytometra hebetata.

Plusia hebetata, Butl. Ill. Het. B.M. vii. p. 71, pl. 131. f. 1 (1889); Hmpsn. Moths Ind. ii. p, 574.

Head and thorax rufous mixed with violaceous grey, the tegulæ with whitish tips; abdomen grey tinged with rufous, the crests rufous tipped with grey. Fore wing violaceous grey suffused with rufous, the terminal area with a cupreous tinge except towards apex and tornus; a slight subbasal line from costa to submedian fold with a red-brown shade beyond it; antemedial line slight, red-brown defined on each side by violaceous grey, inwardly oblique, slightly bent outwards at median nervure, a red-brown shade beyond it; orbicular with faint whitish annulus, elliptical; reniform faintly defined by brown, its annulus represented by some white scales, its outer edge indented at middle; a diffused medial red-brown line, oblique to lower angle of cell, then sinuous; postmedial line brown with a red-brown shade before it, bent outwards below costa, then oblique and sinuous, some white points beyond it on costa; subterminal line red-brown, defined on outer side by some whitish scales below vein 3, excurved below vein 7 and angled outwards below veins 4 and 3; traces of a white line before termen from apex to vein 2. Hind wing whitish suffused with red-brown, an indistinct postmedial line and fine pale line at base of cilia; the underside white tinged with brown, a brownish bar from middle of costa and diffused postmedial and subterminal lines.

Hab. Japan, Tokio (*Maries*), 1 ♂; Punjab, Kulu, Sultanpur (*G. Young*, *Hocking*), 2 ♂, 2 ♀ type, Simla (*Swinhoe*), 1 ♂. *Exp.* 40–52 millim.

8424. **Phytometra ærea.** (Plate CCXXXIX. fig. 21.)

Noctua ærea, Hübn. Eur. Schmett., Noct. f. 271 (1802); Dup. Lép. Fr. vii. 2. p. 17, pl. 133. f. 4; Meigen. Syst. Beitr. Schmett. Eur. iii. p. 250, pl. 121. f. 5; Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 2; Smith, Cat. Noct. N. Am. p. 247.

Head and thorax fulvous; patagia brown and grey behind defined in front by an oblique brown line, the dorsal crest brown and grey behind; pectus and legs pale yellow tinged with rufous, the fore legs suffused with brown in front; abdomen pale yellow dorsally tinged with brown, the basal crest dark brown and grey. Fore wing purplish pink suffused with red-brown and slightly irrorated with grey; a slight brown subbasal striga from costa; antemedial line brown, rather diffused, obliquely curved; reniform indistinctly defined by brown, its outer edge indented at middle; an indistinct waved brown medial line; postmedial line indistinctly double, brown, excurved below costa, then oblique, sinuous and bent outwards below submedian fold; subterminal line dark brown defined on inner side by brown suffusion and on outer by some whitish scales, excurved below costa and angled outwards below veins 4 and 3, a bright rufous patch on its inner side at inner margin; a fine brown terminal line. Hind wing whitish suffused with brown; a brown terminal line; cilia whitish. Underside yellowish white slightly irrorated with brown; fore wing with the disk suffused with brown; hind wing with slight brown subterminal shade.

Hab. Canada, Nova Scotia; U.S.A., E. States, south to Florida and Texas (*Doubleday, Grote*), 3 ♂, 2 ♀, Massachusetts, New York, Distr. of Columbia, Colorado, New Mexico. *Exp.* 36–46 millim.

8425. **Phytometra leonina.**

Plusia leonina, Oberth. Ét. Ent. x. p. 26, pl. iii. f. 11 (1884); Staud. Cat. Lep. pal. p. 237.
Plusia bieti, Oberth. Ét. Ent. x. p. 27 (1884).
Plusia humeralis, Butl. Trans. Ent. Soc. 1886, p. 135.

♂. Head, tegulæ, and prothorax ochreous tinged with rufous and with a few brown scales mixed; palpi red-brown mixed with whitish; thorax brown mixed with grey-white; pectus, legs, and abdomen ochreous tinged with rufous; the crests red-brown. Fore wing purplish grey suffused with brown, the medial and postmedial areas below the cell and vein 3 browner with a slight golden gloss; subbasal line slight, brown, angled outwards below costa and ending at vein 1, a brown shade beyond it diffused towards costa; antemedial line dark brown, angled outwards below costa, oblique and diffused below the cell; the stigma below the cell represented by a slight brown bar; reniform defined by rather diffused brown, narrow and lunulate; a diffused brown medial line, excurved from costa to vein 4 just beyond lower angle of cell, then oblique; post-

medial line dark brown, angled outwards at vein 7, then oblique and excurved at middle and below submedian fold; subterminal line only defined by brown suffusion with a slight golden gloss on its inner side, oblique, arising from termen below apex, slightly angled outwards below veins 4 and 3 and excurved at submedian fold; a diffused golden-brown line before termen from the subterminal line to above vein 3. Hind wing ochreous white suffused with red-brown especially on terminal area; a sinuous brown postmedial line and a fine terminal line with ochreous white lunules before it from apex to vein 2; the underside pale yellow slightly irrorated with brown; fore wing suffused with brown except the costal and subterminal areas; hind wing with brown postmedial line excurved to vein 4, then incurved.

Ab. 1. *bieti*. Fore wing without the velvety brown shade on inner area.—W. China.

Hab. E. Siberia, Ussuri; Japan, Yesso (*Pryer*), 4 ♂ type *humeralis*; W. China, Ta-chien-lu. *Exp.* 52 millim.

8426. **Phytometra chryson.**

Noctua chryson, Esp. Schmett. iv. p. 446, pl. 141. f. 2 (1789); Staud. Cat. Lep. pal. p. 237.
Noctua orichalcea, Hübn. Beitr, ii. 1, p. 28, pl. 4. f. W (1790); id. Eur. Schmett., Noct. f. 278; Dup. Lép. Fr. vii. 2. p. 18, pl. 135. f. 1; Steph. Ill. Brit. Ent., Haust. iii. p. 105; Frr. Beitr. ii. pl. 59 (nec Fabr.).
Noctua ærifera, Sowerby, Brit. Misc. pl. 29 (1805).

Head and tegulæ yellow tinged with rufous, the latter red-brown at tips; thorax dark red-brown mixed with purplish grey; pectus and legs yellow tinged with rufous, the fore and mid tibiæ red-brown in front; abdomen yellow tinged with rufous, the crests and anal tuft at extremity deep red-brown. Fore wing purple-grey tinged with brown, the medial and postmedial areas below the cell and vein 3 dark red-brown with a golden gloss, the veins with slight dark streaks, a metallic golden patch between veins 7 and 3 from the medial to the subterminal lines; a curved red-brown subbasal striga from costa; antemedial line red-brown, excurved below costa and oblique below submedian fold; reniform a small lunule faintly defined by red-brown; a rather diffused red-brown postmedial line, excurved beyond upper angle of cell, then oblique and sinuous; postmedial line red-brown with some violaceous white on it at inner margin, bent outwards below costa, excurved at vein 7 and middle, then oblique and excurved at vein 1; subterminal line brownish, arising below costa and somewhat dentate to vein 2; cilia red-brown at tips. Hind wing yellowish suffused with rufous especially on terminal area; an indistinct postmedial red-brown line. Underside yellow slightly irrorated with brown; fore wing suffused with dark brown except the costal and terminal areas; hind wing with dark discoidal point, postmedial line excurved below costa, and subterminal shade towards tornus.

Ab. 1. Fore wing with the gold patch tinged with green and not extending to the subterminal line.—Corea.

Hab. Britain, Leech Coll.; S. Germany, Zeller Coll.; Austria; Hungary; Switzerland, Frey and Leech Colls.; Greece, Merlin Coll.; Rumelia; Russia, Urals; Armenia; W. Siberia, Altai; E. Siberia, Amurland, Ussuri; Japan, Oiwaké (*Pryer*), 1 ♀, Tokio (*Maries*), 1 ♂, Yokohama (*Pryer*), 1 ♂; Corea, Gensan, 1 ♀. *Exp.* 44–58 millim.

Larva. Meyr. Brit. Lep. p. 157; Barrett, Lep. Brit. vi. p. 97, pl. 240. f. 4; Hffm. Raup. p. 134, pl. 35. f. 9.

Green; dorsal line darker and edged with white; a lateral series of oblique white streaks; spiracles white. Food-plant, *Eupatorium*. 6–7.

8427. **Phytometra balluca.** (Plate CCXXXIX. fig. 22.)

Dyachrysia balluca, Geyer, Zuträge, iv. p. 22, ff. 681–2 (1832); Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 9; Smith, Cat. Noct. N. Am. p. 248.

Head, tegulæ, and prothorax pale rufous; palpi and antennæ brownish grey, the latter with the basal joint white in front, the tegulæ brown at tips; thorax grey-brown mixed with white, the dorsal crest with some rufous in front; pectus and legs whitish tinged with brown; abdomen whitish dorsally tinged with rufous, the crests red-brown tipped with whitish. Fore wing purplish grey tinged with red-brown and suffused with silvery-green except the costal area and cell, the veins finely streaked with red-brown; a brown subbasal striga from costa; antemedial line brown, excurved to median nervure where it is retracted, then oblique; a curved brown discoidal striga with an oblique brown shade above it from costa; postmedial line golden-brown, bent outwards below costa, slightly excurved to vein 4, then slightly incurved; a faint subterminal golden-brown shade, excurved at vein 7 and below veins 4 and 3; a white line just before termen with a cupreous brown shade before it from apex to vein 4. Hind wing red-brown, the cilia brownish white. Underside pale yellow; fore wing with the disk suffused with brown; hind wing with dark discoidal point, postmedial line excurved below costa, and subterminal shade towards tornus.

Hab. Canada, Renfrew Co., 1 ♂, Nova Scotia (*Redman*), 1 ♀, Ontario, Orillia (*Bush*), 2 ♀; U.S.A., Northern, Eastern, and Middle States, 1 ♂, 2 ♀, Trenton Falls (*Doubleday*), 1 ♂. *Exp.* 52–60 millim.

Larva. Saunders, Can. Ent. v. p. 11; Lint. Ent. Cont. iii. Rep. N. York State Cab. xxvi. p. 163.

Yellowish green streaked and spotted with white; sublateral line greenish white; tubercles green striped with white, small on thoracic somites, much larger and ten or twelve on each somite on the abdominal but absent on anal somite, each tubercle with a single whitish hair. Underside deeper green with a few short whitish hairs; head shining green with a few whitish hairs. Food-plant, *Humulus*.

8428. Phytometra zosimi.

Noctua zosimi, Hübn. Eur. Schmett., Noct. f. 651 (1822); Dup. Lép. Fr., Suppl. iv. p. 232, pl. 70. f. 4; Frr. Neue Beitr. pl. 449. f. 1; Herr.-Schäff. Eur. Schmett., Noct. f. 208; Staud. Cat. Lep. pal. p. 237.

Head and thorax whitish mixed with some chocolate-brown; fróns rufous; tegulæ yellowish at base and white at tips, the patagia and thoracic crest white at tips; fore tibiæ chocolate-brown; abdomen white tinged with brown, the crests chocolate-brown. Fore wing whitish tinged with red-brown especially on costal area and in end of cell, the area below and beyond the cell to the postmedial line suffused with brilliant greenish gold; subbasal line slight, brown, sinuous, from costa to vein 1; antemedial line brown, excurved to median nervure, where it is retracted, then oblique with some cupreous brown before it and slightly retracted to inner margin; orbicular defined by brown, round; the stigma below the cell defined by brown, U-shaped; reniform defined by brown and with brown striga in centre; postmedial line brown, obliquely excurved to below vein 3, then incurved with some cupreous brown before it and a golden patch tinged with cupreous brown beyond it; the veins of terminal area streaked with brown; subterminal line red-brown, almost obsolete except from costa to vein 6 and slightly excurved below costa; a fine red-brown terminal line; cilia intersected with red-brown at the veins. Hind wing whitish tinged with red-brown especially on terminal area; a rather diffused brown postmedial line; cilia brownish white intersected with brown at the veins. Underside ochreous white; fore wing suffused with brown except at costa; hind wing with the postmedial line more distinct.

Hab. ? Austria, Galicia; Italy, Piedmont; ? Rumelia; Russia, Urals, Zeller and Frey Colls.; W. Siberia, Altai, 1 ♀; E. Siberia, Amurland, 1 ♂, 3 ♀, Ussuri; Japan, Hakodaté, 1 ♀, Yokohama (*Pryer*), 2 ♂, 1 ♀. *Exp.* 36–46 millim.

8429. Phytometra chrysitis.

Noctua chrysitis, Linn. Syst. Nat. ed. x. p. 513 (1758); Esp. Schmett. iv. pl. 109. ff. 1–5; Sepp, Ins. i. (5) p. 7, pl. 1. ff. 7–12; Hübn. Eur. Schmett., Noct. ff. 272, 662–3; Donovan, Brit. Ins. iv. pl. 137; Dup. Lép. Fr. vii. 2. p. 21, pl. 134. f. 3; Frr. Beitr. pl. 89; Steph. Ill. Brit. Ent., Haust. iii. p. 105; Staud. Cat. Lep. pal. p. 237.
Plusia nadeja, Oberth. Ét. Ent. v. p. 84, pl. 3. f. 10 (1880).
Plusia juncta, Tutt, Brit. Noct. iv. p. 25 (1892).
Plusia disjuncta, Schultz, Illustr. Zeitsch. Ent. v. p. 349 (1900).
Plusia scintillans, Schultz, Intern. Ent. Zeit. i. p. 32 (1907).
Plusia aurea, Huene ? ined., Schultz, Intern. Ent. Zeit. i. p. 32 (1907).

Head and thorax red-brown mixed with purplish grey, the vertex of head, tegulæ towards tips, and thoracic crest in front rufous; tegulæ at tips and an oblique line across patagia white; abdomen grey tinged with red-brown, the crests dark brown tipped with white. Fore wing red-brown suffused with purplish grey and

slightly irrorated with dark brown; subbasal line dark brown, from costa to submedian fold; a broad antemedial greenish metallic gold band defined on outer side by a dark brown line; orbicular defined by dark brown, oblique elliptical; the stigma below the cell defined by dark brown, elliptical; reniform defined by dark brown, narrow and with a curved striga on discocellulars; an indistinct sinuous brown medial line, excurved below the cell; postmedial line dark brown, excurved below costa, then oblique and sinuous; postmedial area greenish metallic gold except at costa, extending to just beyond the subterminal line, which is brown, excurved at middle and with a cupreous brown patch beyond it at inner margin; the veins of terminal area streaked with brown; a fine brown terminal line; cilia intersected with brown at the veins. Hind wing red-brown, the cilia rufous. Underside ochreous irrorated with brown; fore wing suffused with dark brown except the costal and terminal areas; hind wing with slight discoidal lunule, postmedial line excurved below costa, and rather diffused subterminal line except towards costa.

Ab. 1. *disjuncta*. Fore wing with the bands brilliant metallic gold.

Ab. 2. *scintillans*. Paler; fore wing with the bands silvery-blue.

Ab. 3. *juncta*. Fore wing with the bands greenish gold and conjoined by a broad fascia in submedian interspace.

Ab. 4. *aurea*. Similar, but the bands brilliant gold.

Ab. 5. *nadeja*. Similar, the bands silvery-blue and conjoined by a fascia, the bands broader and the postmedial band extending to tornus.—E. Siberia; Japan.

Hab. Britain, Leech Coll.; France; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; Spain, Moncayo (*Chapman*); Russia, St. Petersburg, Zeller Coll.; Armenia; Asia Minor, Pontus, Bithynia; Syria; W. & E. Turkestan; E. Siberia; Amurland, 1 ♂; Japan, Hakodaté (*Andrews, Leech*), 1 ♂, 1 ♀, Tokio (*Maries*), 2 ♂, Nikko (*Maries*), 1 ♂, Chiuzenji (*Lewis*), 1 ♂, Yokohama (*Lewis, Leech, Manley*), 3 ♂; Corea, Gensan (*Leech*), 1 ♀; W. China, Pu-tsu-fang, 1 ♂, Ta-chien-lu (*Pratt*), 1 ♀. *Exp.* 34–44 millim.

Larva. Meyr. Brit. Lep. p. 156; Barrett, Lep. Brit. vi. p. 100, pl. 241. f. 1; Hffm. Raup. p. 134, pl. 35. f. 8.

Green with six white marks above on each somite; lateral line slender, white; a subspiracular series of white points; head green. Food-plants: *Lamium, Urtica, Arctium*, etc. 7 and 9–4.

8430. **Phytometra florina**. (Plate CCXXXIX fig. 23.)

Plusia florina, Guen. Noct. ii. p. 336 (1852).

♂. Head, tegulæ, pro- and mesothorax fiery red mixed with yellowish; patagia and metathoracic crest rufous with some grey at tips, the former with an oblique grey line across them; pectus, legs, and abdomen yellowish suffused with rufous, the last with

the crests tipped with grey. Fore wing rufous tinged with grey and striated with red-brown, the terminal area metallic gold slightly striated with rufous, emitting from its inner edge on inner half an oblique wedge-shaped patch to median nervure, where it extends from the antemedial line to beyond vein 2 and into the middle of cell as a triangular patch; an indistinct double sinuous subbasal line from costa to submedian fold; antemedial line indistinctly double, red-brown, angled outwards below costa, then oblique and angled inwards on median nervure; orbicular represented by the triangular golden patch, faintly defined by red-brown; reniform faintly defined by red-brown; postmedial line red-brown, oblique and slightly sinuous to below end of cell, then retracted to median nervure at outer edge of orbicular, then interrupted by the golden area and oblique to inner margin; subterminal line indistinct, reddish brown, excurved below vein 7 and at middle, and angled inwards at discal and submedian folds; the termen suffused with rufous; cilia whitish mixed with rufous and with a rufous line near base. Hind wing whitish suffused with rufous; the underside white tinged with rufous, an indistinct brownish postmedial line.

Hab. Madagascar, Betsileo (*Cowan*), 1 ♂. *Exp.* 36 millim.

8431. Phytometra orichalcea.

Noctua orichalcea, Fabr. Syst. Ent. p. 607 (1775); Hmpsn. Moths Ind. ii. p. 573.

Noctua chrysitina, Martyn, Psyche, pl. 21 f. 56 (1797); Moore, Lep. Ceyl. iii. p. 70, pl. 152. f. 7.

Noctua aurifera, Hübn. Eur. Schmett., Noct. f. 463 (1822); Dup. Lép. Fr. vii. 2. p. 24, pl. 134. f. 2; Frr. Neue Beitr. pl. 509. ff. 1, 2; Staud. Cat. Lep. pal. p. 237.

Head and thorax rufous, the tegulæ at tips, the patagia and thoracic crest behind red-brown irrorated with grey; tegulæ with a slight brown line near base; antennæ whitish ringed with brown; pectus and legs red-brown, the tarsi ringed with white; abdomen whitish suffused with rufous. Fore wing purplish grey suffused with red-brown and striated with dark brown, the postmedial area brilliant metallic gold from just below costa to submedian fold above which it emits an oblique fascia to median nervure on which it extends from well before the orbicular to beyond origin of vein 2; orbicular defined by silvery-grey, rounded; reniform faintly defined by silvery-grey, its outer edge strongly indented at middle; postmedial line slight, double, red-brown, filled in with grey, bent outwards below costa, then oblique and slightly sinuous, retracted at vein 5, interrupted at the golden fascia and bent outwards above inner margin; an indistinct oblique waved red-brown subterminal line; a fine waved red-brown line before termen defining the golden area; a fine red-brown terminal line. Hind wing dark cupreous red-brown, the interspaces of basal half white; cilia whitish with a brown line through them; the underside white irrorated with red-brown, the terminal

area grey suffused and irrorated with dark brown, a slight dark discoidal lunule and waved postmedial and subterminal lines.

Hab. Britain; France; S. Germany; Spain; Azores, Horta Fayal (*J. J. Walker*), 1 ♂; Madeira (*Wollaston*), Zeller and Leech Colls., 4 ♂, 3 ♀; Canaries, 1 ♀, Leech Coll., Teneriffe (*Gomez, Walsingham*), 3 ♂; Ascension (*Conry*), 1 ♀; St. Helena (*Wollaston, Gillespie*), 7 ♂; Gold Coast, Accra (*Sir G. Carter*), 1 ♀; Abyssinia (*Drake-Brockman*), 1 ♂; Somaliland (*Drake-Brockman*), 1 ♀; Br. E. Africa, Nairobi (*Anderson*), 1 ♀, Machakos (*Crawshay*), 3 ♂, Kikuyu (*Betton*), 1 ♀, Naitolia (*Betton*), 1 ♂, Eb Urru (*Betton*), 1 ♂, N. Kavirondo (*Neave*), 1 ♂, S. Kavirondo (*Neave*), 1 ♀, S. Kakumega Forest (*Neave*), 1 ♂; Uganda, Entebbe (*Wollaston*), 1 ♂, Ruwenzori (*Wollaston*), 1 ♂; N. Rhodesia, Serenje Distr. (*Neave*), 2 ♂; Mashonaland, Salisbury (*Marshall*), 3 ♂; Rhodesia, Bulawayo (*Marshall*), 2 ♂; Transvaal (*Rose*), 1 ♂, Pretoria (*Distant*), 1 ♂, 2 ♀, Johannesburg (*Rose*), 1 ♂; Natal, Malvern (*Marshall*), 1 ♀, Durban (*Burrows, Bowker, Leigh*), 5 ♂, 2 ♀; Basutoland (*Crawshay*), 1 ♂; Cape Colony, Grahamstown, 1 ♀; Madagascar; Mauritius (*Pfeiffer, Manders*), 2 ♀; C. China, Shanghai, 2 ♂; Kashmir (*Nurse*), 1 ♀, Kylang (*McArthur*), 1 ♀, Karakorum (*Leech*), 1 ♀, Goorais Valley (*Leech*), 1 ♂, Narkundah (*McArthur*), 1 ♀, Kutie Pass (*McArthur*), 1 ♂; Punjab, Kulu, Sultanpur (*G. Young*), 1 ♂, Dalhousie, 1 ♂, Kasauli (*Barrow*), 2 ♂, 1 ♀, Thundiani (*Yerbury*), 1 ♀, Campbellpur (*Yerbury*), 2 ♂, 1 ♀, Dharmsála (*Hocking*), 3 ♂, 1 ♀, Manpuri, 1 ♂, Allahabad, 1 ♀, Wuzeerabad (*Hearsey*), 1 ♂; Sikhim (*Dudgeon*), 2 ♂; Assam (*Badgley*), 1 ♀, Silhet (*Stainsforth*), 1 ♂, Shillong (*Parish*), 1 ♂, 1 ♀; Bengal, Chausa (*Betton*), 1 ♂, Pusa (*Lefroy*), 1 ♀; Madras, Nilgiris (*Hampson*), 2 ♂; Travancore, Pirmád (*Mrs. Imray*), 1 ♂, 1 ♀; India, type in Banksian Coll.; Ceylon, 1 ♂; Java (*Horsfield*), 2 ♂, 1 ♀; N. Guinea, Sojeri, 1 ♂. *Exp.* 38–48 millim.

Larva. Bluish green with a few short dorsal hairs; slender dorsal white lines and a prominent lateral line. Food-plant, *Coreopsis*.

Genus **PALÆOPLUSIA**, nov.

Type, *P. venusta*.

Proboscis fully developed; palpi upturned, the 2nd joint reaching to middle of frons and fringed with long hair in front, the 3rd short; frons smooth, with large tuft of hair; eyes large, round, overhung by long cilia; antennæ of male ciliated; thorax clothed with hair only, the metathorax with large divided crest; tibiæ fringed with rather long hair; abdomen with dorsal ridges of hair on basal segments but without crests. Fore wing with the apex rounded, the termen evenly curved and not crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell half the length of wing; veins 3, 4 from angle; 5 fully developed from well above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

8432. **Palæoplusia venusta.** (Plate CCXXXIX. fig. 24.)

Plusia venusta, Wlk. xxxiii. 836 (1865); Ottolengui, J. N.Y. Ent. Soc. x. pl. vii. f. 11; Smith, Cat. Noct. N. Am. p. 248.
Plusia striatella, Grote, Bull. Buff. Soc. Nat. Sci. i. p. 194 (1873).

Head and thorax ochreous tinged with rufous; antennæ rufous; patagia with oblique rufous bars at base edged behind by whitish; abdomen ochreous. Fore wing bright rufous; the costal area ochreous, broadly beyond the cell where it extends to vein 5; the inner area ochreous, extending to just above vein 1, which is

Fig. 127.—*Palæoplusia venusta*, ♂. ½.

streaked with rufous, except at base; a silvery-white streak from below middle of cell to near termen above vein 2; a black point at upper angle of cell; a fine brown terminal line defined on inner side by an ochreous line except towards tornus, the rufous curving upwards on its inner side to below apex; cilia ochreous, the tips pale rufous. Hind wing ochreous suffused with glossy brown; a slight ochreous line before the fine terminal brown line; cilia ochreous; the underside ochreous, the terminal half faintly tinged with rufous except towards tornus, a slight brown discoidal lunule.

Hab. Canada, Ontario, Orillia (*Bush*), 1 ♀ type, Alberta, Calgary (*Wolley-Dod*), 2 ♂; U.S.A., Maine, New York, 2 ♂, Distr. of Columbia. *Exp.* 34–38 millim.

Genus **ABROSTOLA.**

Abrostola, Ochs. Schmett. Eur. iv. p. 88 (1816), non descr.;	Type.	
Steph. Ill. Brit. Ent., Haust. iii. p. 96 (1829)	*triplasia.*	
Inguridia, Butl. A. M. N. H. (5) iv. p. 354 (1879)	*abrostolina.*	

Proboscis fully developed; palpi upturned, the 2nd joint reaching to about vertex of head and moderately scaled, the 3rd rather long; frons smooth with large tuft of hair, a flattened tuft of hair between antennæ; eyes large, round, overhung by long cilia; antennæ of male minutely ciliated; thorax clothed almost entirely with scales, the meso- and metathorax with large

divided crest; tibiæ fringed with rather long hair; abdomen with dorsal series of crests, the crests on 1st and 3rd segments larger, lateral fringes of hair except on basal segments. Fore wing with the apex rounded, the termen evenly curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell; slight tufts of raised scales in and below end of cell. Hind wing with the cell about half length of wing; veins 3, 4 from angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

A. Fore wing with the antemedial line obliquely curved to near lower angle of cell, then retracted and hooked below the cell ..... *formosa.*
B. Fore wing with the antemedial line evenly curved.
  a. Fore wing with the antemedial line very strongly excurved ..... *ovalis.*
  b. Fore wing with the antemedial line moderately excurved.
    a^1. Fore wing with the spot below the orbicular rounded ..... *urentis.*
    b^1. Fore wing with the spot below the orbicular more quadrate ..... *tripartita.*
C. Fore wing with the antemedial line incurved in the cell.
  a. Fore wing with the postmedial line closely approximated to the upper extremity of reniform ..... *asclepiadis.*
  b. Fore wing with the postmedial line produced to well beyond upper extremity of reniform ..... *triplasia.*
D. Fore wing with the antemedial line incurved in the cell and at vein 1.
  a. Fore wing without oblique whitish shade from apex.
    a^1. Fore wing with the postmedial line excurved above inner margin ..... *anophioides.*
    b^1. Fore wing with the postmedial line not excurved above inner margin.
      a^2. Fore wing not mostly suffused with fuscous, the spot below the orbicular round ..... *triopis.*
      b^2. Fore wing almost entirely suffused with fuscous, the spot below the orbicular oblique elliptical ... *abrostolina.*
  b. Fore wing with oblique whitish shade from apex.
    a^1. Fore wing with the stigmata small, entirely defined by black ..... *canariensis.*
    b^1. Fore wing with the stigmata large, defined by black points ..... *brevipennis.*

*8433. Abrostola formosa. (Plate CCXXXIX. fig. 25.)

Leptina formosa, Grote, Proc. Ent. Soc. Phil. iv. p. 323 (1865); Ottolengui, J. N.Y. Ent. Soc. x. pl. ix. f. 13; Smith, Cat. Noct. N. Am. p. 249.

♀. Head white; palpi irrorated with brown; frons with lateral brown bars; antennæ and vertex of head red-brown; thorax red-brown with some white at sides, the tegulæ with black medial line; pectus and legs white tinged with red-brown; abdomen whitish dorsally suffused with red-brown. Fore wing pale red-brown, the basal area, the cell to near extremity, and a patch below its extremity violaceous white faintly tinged with red-brown; some slight black streaks below costa; an oblique antemedial black striga from costa; the whitish area defined by the diffused red-brown antemedial line and raised dark scales, slightly angled

outwards below costa, obliquely excurved to lower angle of cell, then curved downwards and hooked below origin of vein 2, then oblique and sinuous to inner margin near base; reniform with white annulus and its centre defined by red-brown, concave towards base, an oblique chocolate-brown shade before it from costa; postmedial line double, brown filled in with white and defined on outer side by white, the inner line towards costa and the outer line towards inner margin darker and more prominent, bent outwards below costa, then minutely waved, incurved just below vein 3 and bent inwards to inner margin; subterminal line black-brown, rather diffused on inner side, evenly curved, the area beyond it violaceous white with a red-brown line beyond the subterminal line and a black terminal line; cilia with fine white lines at base and middle. Hind wing whitish suffused with red-brown, the terminal area darker; cilia brown at base, white at tips; the underside whitish tinged with red-brown, traces of a curved postmedial line and a fine dark terminal line.

Hab. U.S.A., Maine, Massachusetts, New York in Coll. W. Barnes, New Jersey. *Exp.* 36 millim.

Larva. Kearfott, Ent. New Philad. xv. p. 301.

Head small, each somite increasing in height, the anal somite three or four times height of head and vertical behind; pea-green with waved white dorsal stripe and each somite with white band. Food-plant, *Vaccinium*. Spins a loose cottony cocoon. 5.

8434. **Abrostola ovalis.** (Plate CCXXXIX. fig. 26.)

Abrostola ovalis, Guen. Noct. ii. p. 322, pl. 11. f. 11 (1852); Smith, Cat. Noct. N. Am. p. 246.

♂. Head and tegulæ brown mixed with grey, a black bar between antennæ, the tegulæ with black line near base and some black scales at tips; patagia pinkish white edged with red-brown above and with red-brown bar at middle; thorax ochreous white; pectus in front and legs brown, the tarsi with pale rings; abdomen brown mixed with grey, some ochreous hair at base of sides. Fore wing with the basal area pinkish white irrorated with red-brown and with slight red-brown subbasal marks below costa and cell and on vein 1; antemedial line double, the outer line black, the inner red-brown, strongly and evenly excurved; orbicular, reniform, and a spot below the former large, defined by black and with raised black scales on their edges, the orbicular oblique and open above and below, the reniform elliptical; postmedial line double, indistinct to vein 5, then the inner line black, the outer red-brown, strongly bent outwards below costa, slightly waved to vein 5, then oblique, excurved below submedian fold, some grey points with blackish streaks between them beyond it on costa and a whitish patch on inner area; subterminal line indistinct, greyish, minutely dentate; a black terminal line. Hind wing with the basal half whitish suffused with brown, the terminal half brown; cilia white

with some brown at base; the underside ochreous white, the costal area irrorated with brown, the terminal area brown, a dark discoidal lunule.

Hab. CANADA; U.S.A., Massachusetts, New York (*Doubleday*), 1 ♂ type, Pennsylvania, New Jersey. *Exp.* 36 millim.

8435. Abrostola urentis. (Plate CCXXXIX. fig. 27.)

Abrostola urentis, Guen. Noct. ii. p. 322 (1852); Smith, Cat. Noct. N. Am. p. 246.

Head and thorax red-brown mixed with grey; black bars above frons and between antennæ; tarsi blackish ringed with white; abdomen grey mixed with brown, the crests blackish. Fore wing brown mixed with grey; subbasal line blackish, from costa to submedian fold; antemedial line black defined on inner side by red-brown, slightly and evenly excurved; orbicular, reniform, and a spot below the former large, defined by black and with some raised scales on their edges, the orbicular and spot below it oblique and open above and below; postmedial line double, indistinct to vein 3, then the inner line black and the outer red-brown, bent outwards below costa, then slightly sinuous to vein 4, then slightly incurved, some whitish points with dark streaks between them beyond it on costa; subterminal line grey defined on each side by brown, with slight double dentate black mark before it below costa and some black beyond it at apex and above tornus, minutely dentate; a black terminal line and dark line near base of cilia. Hind wing with the basal half whitish suffused with brown, the terminal half dark brown; cilia white with some brown at base; the underside white irrorated with brown on costal half, the terminal area suffused with brown except towards tornus, a slight brown discoidal lunule and traces of diffused waved postmedial and subterminal lines.

Hab. CANADA, Renfrew Co. (*Grote*), 1 ♂, Nova Scotia (*Redman*), 1 ♀, Manitoba, Winnipeg (*Wallis*), 2 ♀, Vancouver I. (*Livingston*), 1 ♂, 1 ♀; U.S.A., south to Distr. of Columbia, Middle and Central States, 4 ♂, Massachusetts, Beverly, 1 ♀, New York, Albany (*Hill*), 1 ♂, Trenton Falls (*Doubleday*), 1 ♂, 1 ♀ type. *Exp.* 30–34 millim.

8436. Abrostola tripartita.

Noctua tripartita, Hüfn. Berl. Mag. iii. p. 414 (1767); Staud. Cat. Lep. pal. p. 235.
Noctua asclepiadea, Esp. Schmett. iv. pl. 169. ff. 4, 5 (nec Schiff).
Noctua triplasia, Hübn. Eur. Schmett., Noct. f. 269 (nec Linn.).
Noctua urticæ, Hübn. Eur. Schmett., Noct. f. 625 (1818); Frr. Neue Beitr. pl. 287.

Head and thorax black-brown mixed with red-brown and white; black bars above frons and between antennæ; tegulæ white edged with black-brown and with curved black-brown line at middle;

palpi, pectus, and legs reddish brown, the tarsi black ringed with white; abdomen reddish brown with some whitish hair at base, the crests black-brown. Fore wing dark reddish brown, a patch of white suffusion on inner area before the antemedial line and the inner half of terminal area suffused with white; subbasal line blackish, waved, from costa to submedian fold; antemedial line indistinctly double, the inner line brown, the outer black, evenly excurved; orbicular, reniform, and a spot below the former large, defined by black with some raised scales on their edges, the orbicular and spot below it open above and below, the latter oblique quadrate; postmedial line double, the inner line black, slight to vein 3, then strong, the outer brown, slightly bent outwards below costa, oblique to discal fold, incurved below vein 5 and excurved on inner area, some greyish points with dark streaks between them beyond it on costa and a white line on inner area; subterminal line white slightly defined on each side by brown, with double dentate black mark before it below costa and some black beyond it at apex, minutely waved; a waved black terminal line. Hind wing with the basal half whitish suffused with red-brown, the terminal half red-brown; cilia white with some red-brown at base; the underside white irrorated with brown, the terminal area brown, a small brown discoidal lunule.

Hab. Britain, Leech Coll.; France; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; Spain, Castile, Bilbao; N. Italy, Courmayeur (*Hampson*); Armenia; Asia Minor, Pontus; W. Turkestan, Tarbagatai; W. Siberia, Altai; E. Siberia, Amurland. *Exp.* 34–38 millim.

Larva. Meyr. Brit. Lep. p. 160; Barrett, Lep. Brit. vi. p. 137, pl. 244. f. 1; Hffm. Raup. p. 132, pl. 35. f. 1.

Pale green mixed with whitish on dorsum; dorsal series of darker elliptical marks; subdorsal series of oblique darker streaks; lateral line white connected on 4th to 6th somites by white lines with the dorsal area; 11th somite with two dorsal prominences; 1st two pairs of prolegs smaller. Food-plants: *Urtica*, *Epilobium*, etc. 8–9.

8437. Abrostola asclepiadis.

Noctua asclepiadis, Schiff, Wien. Verz. p. 91 (1776); Hübn. Eur. Schmett., Noct. f. 627; Frr. Neue Beitr. pl. 286; Staud. Cat. Lep. pal. p. 235. *Abrostola jagowi*, Bartel, Iris, xvii. p. 160 (1904).

Head and thorax dark reddish brown mixed with whitish; black bars on frons and between antennæ; tegulæ edged with black in front and at middle; prothorax with pair of small blackish spots; palpi, pectus in front, and legs dark brown, the tarsi ringed with white; abdomen brown mixed with whitish, the crests blackish. Fore wing brown glossed with grey, the basal area ochreous tinged with pink and white with slight dark subbasal marks; antemedial line double, the outer line black, the inner red-brown, slightly excurved below costa and evenly excurved below subcostal nervure;

orbicular, reniform, and a spot below outer edge of former large, defined by black with some raised scales on their edges and slight greyish centres; postmedial line double, the inner line brown to vein 5, then black, the outer red-brown, bent outwards below costa, then slightly sinuous to vein 5, then incurved and excurved above inner margin, some greyish points beyond it on costa and a whitish line on inner area; subterminal line whitish with two slight black streaks before it below costa and slight black streaks beyond it on the veins, minutely dentate; a black terminal line; cilia pale reddish brown chequered with blackish at tips. Hind wing with the basal half whitish suffused with brown, the terminal half brown; cilia white tinged with red-brown; the underside with the basal area whiter, the costal area tinged with red-brown, a small brown discoidal lunule.

Ab. 1. *jagovi*. Fore wing with the basal area not tinged with pink and without dark marks.—Engadine.

Hab. France, Sand Coll.; Denmark, Gotland; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland, Zeller Coll., Engadine; N. Italy; Dalmatia; S.W. Russia; E. Siberia, Ussuri; Japan. *Exp.* 36–40 millim.

Larva. Kirby, Butt. & Moths Eur. p. 267; Hffm. Raup. p. 132, pl. 34. f. 19.

Bluish white with numerous black dots and a yellow lateral stripe; 1st two pairs of prolegs smaller. Food-plant, *Cynanchum vincetoxicum*. 5–6.

8438. Abrostola triplasia.

Noctua triplasia, Linn. Syst. Nat. ed. x. p. 517 (1758); Esp. Schmett. iv. pl. 169. ff 1–3; Hübn. Eur. Schmett., Noct. f. 626; Dup. Lép. Fr. vii. 1. p. 486, pl. 132. f. 1; Frr. Neue Beitr. pl. 285; Led. Wien. Ent. Mon. v. pl. 2. f. 2 (1861); Staud. Cat. Lep. pal. p. 235.
Plusia clarissa, Staud. Iris, xii. p. 381 (1899).

Head and thorax reddish brown mixed with ochreous white; black bars on frons and between antennæ; tegulæ edged with black; prothorax with pair of small black spots; palpi, pectus, and

Fig. 128.—*Abrostola triplasia*, ♂. ½.

legs dark brown; abdomen dark brown with some ochreous white at base, the crests blackish. Fore wing brown with a greyish gloss, the basal area pale reddish brown; antemedial line black

defined on inner side by red-brown, slightly excurved below costa and evenly excurved below subcostal nervure; orbicular, reniform, and a spot below outer edge of former large, defined by black and with some raised scales on their edges; postmedial line reddish brown and indistinct to vein 5, then black defined on outer side by red-brown, strongly bent outwards below costa, then incurved, excurved above inner margin, some grey points beyond it on costa and a whitish line on inner area; subterminal line represented by a series of black points on the veins with slight whitish streaks before them and three black streaks below costa, and by a blackish bar defined on inner side by white towards tornus; a fine black terminal line; cilia with a dark line near base. Hind wing with the basal half whitish suffused with brown, the terminal half brown; cilia white with slight brown spots near base; the underside with the basal half whiter, the costal area irrorated with brown, a slight brown discoidal spot.

Ab. 1. *clarissa*. Much paler and greyer.—Asia Minor, Syria.

Hab. Britain, Leech Coll.; France; Germany, Zeller, Frey, and Leech Colls.; Austria, Zeller Coll.; Hungary; Switzerland, Frey Coll.; Spain; Italy; Algeria; Greece; Balkan States; Scandinavia; Russia, Livonia, Zeller Coll.; Armenia; Asia Minor, Pontus, Taurus, Antioch, Bythinia; Syria, Mardin; W. Siberia; E. Siberia, Amurland, Ussuri; Japan, Hakodaté, 1 ♂, Tokio (*Maries*), 1 ♂, 1 ♀, Oiwaké (*Pryer*), 1 ♀, Yokohama (*Pryer*), 1 ♂; W. China, Chia-kou-ho (*Pratt*), 2 ♂, Pu-tsu-fong, 1 ♂, 1 ♀, Moupin (*Kricheldorf*), 1 ♂. *Exp.* 34–40 millim.

Larva. Meyr. Brit. Lep. p. 160; Barrett, Lep. Brit. vi. p. 140, pl. 244. f. 2; Hffm. Raup. pl. 34. f. 18.

Olive-green or purplish brown; dorsal line pale, interrupted by pale-edged dark blotches on somites 4, 5 and 11; lateral series of pale oblique streaks; spiracular line ochreous white; 11th somite with pair of dorsal prominences; head pale greyish ochreous freckled with brown; the 1st two pairs of prolegs smaller. Food-plants: *Urtica*, *Humulus*, *Lamium*, etc. 7–9.

8439. **Abrostola anophioides.** (Plate CCXXXIX. fig. 28.)

Abrostola anophioides, Moore, Lep. Atk. p. 148 (1882); Hmpsn. Moths Ind. ii. p. 577.

♂. Head and thorax brown mixed with purplish grey; pectus ochreous behind; abdomen brown mixed with grey, the lateral fringes of hair and anal tuft ochreous. Fore wing fuscous brown tinged with purplish grey, the basal area with an ochreous tinge; subbasal line slight, dark, waved, from costa to submedian fold; antemedial line black defined on inner side by red-brown, excurved below costa, then sinuous; orbicular, reniform, and a rounded spot below the outer edge of former large, defined by black and with raised scales on their edges; postmedial line indistinct and reddish brown to vein 3, then black defined on outer side by red-brown, strongly bent outwards below costa, then oblique and sinuous to

vein 3, then incurved and excurved below submedian fold, some greyish points beyond it on costa; subterminal line indistinct, pale slightly defined on outer side by blackish, minutely dentate, with three short black streaks before it below costa; a terminal series of slight dark lunules. Hind wing with the basal half white, the veins and inner margin tinged with brown; the terminal half fuscous brown; the underside with the costal area suffused with brown, a blackish discoidal spot.

♀. Abdomen with the lateral fringes and anal tuft not ochreous; hind wing with the basal area suffused with brown.

Hab. Sikhim (*Magee, Möller*), 1 ♂, 1 ♀ type. *Exp.* ♂ 36, ♀ 44 millim.

8440. **Abrostola triopis.** (Plate CCXXXIX. fig. 29.)

Abrostola triopis, Hmpsn. Ann. S. Afr. Mus. ii. p. 344 (1902).

Head and thorax dark brown mixed with grey-white, the vertex of head and tegulæ ochreous and red-brown; palpi black-brown, white in front; pectus black-brown in front; tarsi blackish ringed with white; abdomen grey-brown with some white hair at base of sides, the ventral surface white irrorated with brown. Fore wing grey suffused with dark brown; subbasal line slight, double, red-brown, curved, from costa to median nervure; antemedial line double, the inner line red-brown, the outer black, slightly angled outwards below costa and incurved at vein 1; orbicular, reniform, and a spot below outer edge of former large, grey defined by black with some raised scales on their edges, their centres slightly defined by brown; postmedial line double, the inner line black, the outer red-brown, bent outwards and obsolescent below costa, then oblique and slightly sinuous to vein 3 and excurved above inner margin, some grey points beyond it on costa; subterminal line whitish defined on each side by rather diffused dark brown, waved; a waved black terminal line. Hind wing with the basal half white tinged with brown and with the veins brown, the terminal half dark cupreous brown; cilia white slightly tinged with brown; the underside white, the veins and costal area irrorated with brown, the terminal area suffused with brown, a small dark discoidal spot and rather diffused sinuous postmedial line.

Hab. Br. E. Africa, Eb Urru (*Betton*), 3 ♀; Zululand, Tugela R. (*Reynolds*), 1 ♀; Natal, Durban (*Bowker, Ross, Innes, Leigh*), 1 ♂, 6 ♀ type; Cape Colony (*Drege*), 1 ♀. *Exp.* 28–36 millim.

8441. **Abrostola abrostolina.** (Plate CCXXXIX. fig. 30.)

Inguridia abrostolina, Butl. A. M. N. H. (5) iv. p. 354 (1879).

Head and thorax red-brown mixed with dark brown; pectus and hind legs with some grey; tarsi black-brown ringed with whitish;

abdomen dark brown tinged with grey. Fore wing dark brown mixed with red-brown and grey; an indistinct curved greyish subbasal line from costa to submedian fold; antemedial line black defined on inner side by red-brown, slightly angled outwards below costa, then sinuous and slightly angled inwards on vein 1; orbicular, reniform, and a spot below outer edge of former large, grey with some dark brown in centres, defined by black and with some raised scales on their edges; postmedial line double, the inner line black, the outer red-brown, slightly bent outwards below costa, excurved to discal fold, then oblique, some greyish points beyond it on costa; subterminal line grey defined on each side by diffused brown, somewhat excurved below vein 7 and at middle; a black terminal line. Hind wing dark brown with a cupreous gloss; cilia white, tinged with brown at apex; the underside with the basal half whitish suffused with brown, a slight dark discoidal lunule and curved postmedial line.

Hab. Japan, Oiwaké (*Pryer*), 1 ♀, Yokohama (*Pryer*), 3 ♂, 5 ♀ type, Kiushiu, 1 ♀. *Exp.* 26–32 millim.

8442. **Abrostola canariensis**, n. sp. (Plate CCXXXIX. fig. 31.)

♂. Head and thorax grey mixed with some blackish, the vertex of head, tegulæ, and dorsum of thorax ochreous and rufous; palpi and pectus in front black-brown; tarsi blackish ringed with white; abdomen fuscous and grey, some white hair at base of sides, the crests black, the anal tuft reddish ochreous, the ventral surface white irrorated with brown. Fore wing grey suffused with brown; subbasal line slight, black, waved, from costa to vein 1; antemedial line double, the inner line red-brown with a reddish tinge before it, the outer black, sinuous; orbicular, reniform, and a spot below outer edge of former rather small, pale grey defined by black with some raised scales on their edges, their centres defined by fuscous; postmedial line double, the inner line black expanding into a small spot below vein 2, the outer red-brown, bent outwards and obsolescent below costa, then sinuous and somewhat oblique, some grey points beyond it on costa; an oblique white shade from apex defined below by fuscous; subterminal line whitish, minutely waved, somewhat excurved below costa and at middle; a sinuous black terminal line; cilia fuscous at tips. Hind wing whitish with the veins brown; an oblique brown postmedial line; the terminal area suffused with brown; cilia white with a brown line through them; the underside white, the veins, costal and terminal areas irrorated with brown, a black discoidal spot and sinuous postmedial line excurved below costa.

Hab. Canaries, Teneriffe (*W. White*), 1 ♂, Sta. Cruz (*Walsingham*), 1 ♂ type. *Exp.* 34 millim.

8443. **Abrostola brevipennis.** (Plate CCXXXIX. fig. 32.)

Xylina brevipennis, Wlk. xv. 1734 (1858).

Head and thorax red-brown mixed with ochreous and some dark brown; tegulæ with black bars at middle; palpi blackish at sides; legs with blackish mixed, the tarsi black ringed with whitish; abdomen ochreous brown, the basal crest black. Fore wing red-brown with an ochreous tinge, suffused in parts with fuscous; antemedial line double, the inner line red-brown with some blackish suffusion before it, the outer fine, black, excurved and slightly waved, some black beyond it in submedian interspace; orbicular and reniform large, incompletely defined by black and with some raised scales on their edges, some fuscous in centre of former and inner part of latter; the spot below the cell defined by three points of raised black scales; some blackish suffusion on medial part of costa and between the stigmata; postmedial line very indistinct to vein 3, then fine, black, sinuous, strongly bent outwards below costa, then somewhat dentate to vein 3, the costa beyond it with ochreous points with black streaks between them; an oblique ochreous fascia from apex defined below by diffused blackish, continued as a slightly curved shade to above inner margin beyond the postmedial line, with slight black spots on the veins at middle and two short black streaks below apex; a fine waved black terminal line. Hind wing with the basal half whitish tinged with brown and with the veins brown, the terminal half brown with a cupreous gloss; cilia whitish, brown at base except towards tornus; the underside with the basal half white irrorated and suffused with brown, a brown discoidal bar and rather diffused postmedial line excurved below costa.

Ab. 1. Fore wing more uniformly suffused with fuscous.

Hab. Br. E. Africa, Eb Urru (*Betton*), 1 ♀, E. Quaso (*Betton*), 1 ♀, Munisu (*Ld. Delamere*), 1 ♂, Nairobi (*Anderson*), 2 ♂; Transvaal, White R. (*Cooke*), 1 ♂, Natal, Victoria Distr. (*Gooch*), 1 ♂, Durban (*Gueinzius, Clark*), 1 ♂, 1 ♀ type. *Exp.* 28–36 millim.

Genus **MOURALIA.**

	Type.
Mouralia, Wlk. xv. 1803 (1858)	*tinctoides.*

Proboscis fully developed; palpi upturned, the 2nd joint reaching to vertex of head and moderately scaled, the 3rd long; frons smooth, with tuft of hair above; eyes large, round, overhung by long cilia; antennæ of male ciliated; thorax clothed with scales and hair mixed, the pro- and metathorax with spreading crests; tibiæ moderately fringed with hair; abdomen with dorsal series of small crests. Fore wing with the costa arched towards apex which is somewhat produced and acute, the termen evenly curved, crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell; small tufts of raised scales in and below the cell. Hind wing with veins 3, 4 from angle of cell; 5 fully developed from well above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

8444. Mouralia tinctoides.

Abrostola tinctoides, Guen. Noct. ii. p. 323 (1852).
Mouralia annulifera, Wlk. xv. 1803 (1858); Druce, Biol. Centr.-Am., Het. ii. p. 462, pl. 91. f. 10.

Head and thorax red-brown mixed with dark brown, the patagia and sides of metathorax grey mixed with dark brown; pectus and legs brownish grey, the hind tibiæ with diffused blackish band, the tarsi banded blackish and whitish; abdomen grey-brown, the anal tuft and ventral surface whitish mixed with brown. Fore wing fuscous mixed with grey-white; a pale brown patch on basal costal area; antemedial line double, black, the inner line indistinct, filled in with purple-brown and with some purple-brown beyond it, slightly bent inwards to costa and inner margin; orbicular, reniform, and a

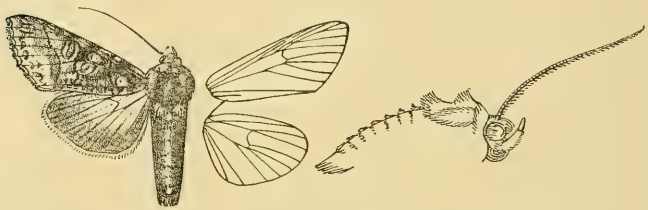


Fig. 129.—*Mouralia tinctoides*, ♂. ½.

spot below the cell just beyond the former large, rounded, defined by black with slight tufts of raised scales on their edges, their centres grey slightly defined by fuscous; postmedial line black, strongly bent outwards below costa and oblique to below vein 7, then incurved, excurved double and filled in with whitish below submedian fold, some purple-brown before and beyond it except towards costa and inner margin, some whitish points beyond it on costa; subterminal line whitish defined on outer side by fuscous and with purplish fuscous suffusion before it except below vein 3, slightly waved, with black streaks before and beyond it above veins 7, 6; a waved black terminal line; cilia greyish with a waved fuscous line through them. Hind wing fuscous brown with a cupreous tinge, the interspaces of basal half whitish; cilia white, tinged with brown at base; the underside with the costal area brown irrorated with grey to beyond middle, a slight discoidal lunule.

Hab. Mexico, Jalapa (*Trujillo*), 1 ♀, Godman-Salvin Coll.; Haiti (*Tweedie*), 1 ♂ type *annulifera*; Brazil, Neue Friburg; S. Peru, Uruhuasi (*Watkins*), 1 ♀; Argentina, Buenos Ayres (*Wilkinson*), 1 ♀. *Exp.* 44 millim.

Genus EPISEMA.

Episema, Ochs. Schmett. Eur. iv. p. 65 (1816), non descr.; Type.
Treit. Schmett. Eur. v. (1) p. 111 (1825) ..... *cæruleocephala.*
Diloba, Boisd. Ind. Meth. p. 88 (1840) ..... *cæruleocephala.*

Proboscis aborted, small; palpi porrect, the 2nd joint extending to just beyond the frons and fringed with long hair above and below, the 3rd moderate; frons smooth, with large tuft of hair; eyes large, round, overhung by long cilia; antennæ of male bipectinate to apex with rather long branches, of female minutely serrate, with tufts of hair from basal joint and between and behind their bases; thorax clothed with hair and hair-like scales, the prothorax with slight crest, the metathorax with large crest; tibiæ and the tarsal joints fringed with long hair; abdomen with ridges of hair and lateral tufts of hair but without distinct crests, the anal tuft in female large. Fore wing with the apex rounded, the termen evenly curved and slightly crenulate; veins 3 and 5 from near angle of cell; 6 from upper angle; 9 from 10 anastomosing with 8 to form the areole; 11 from cell. Hind wing with the cell about half the length of wing; vein 3 from before angle; 5 fully developed from above angle; 6, 7 from upper angle; 8 anastomosing with the cell near base only.

8445. Episema cæruleocephala.

Bombyx cæruleocephala, Linn. Syst. Nat. ed. x p. 504 (1758); Esp. Schmett. iii. pl. 58. ff. 1–4; Hübn. Eur. Schmett., Bomb. f. 196; Dup. Lép. Fr. vi. p. 187, pl. 85. f. 1; Staud. Cat. Lep. pal. p. 168.
Diloba armena, Staud. Cat. Lep. Eur. ii. p. 76 (1871).
Diloba bipartita, Strand, Arch. Naturv. Christian. xxv. no. 9, p. 12 (1903).
Diloba orbimaculata, Strand. Arch. Naturv. Christian. xxv. no. 9, p. 12 (1903).
Diloba separata, Schultz, Soc. Ent. xxii. 52 (1907).

Head and thorax dark brown mixed with grey-white; tegulæ red-brown, the tips white with some dark brown before them;

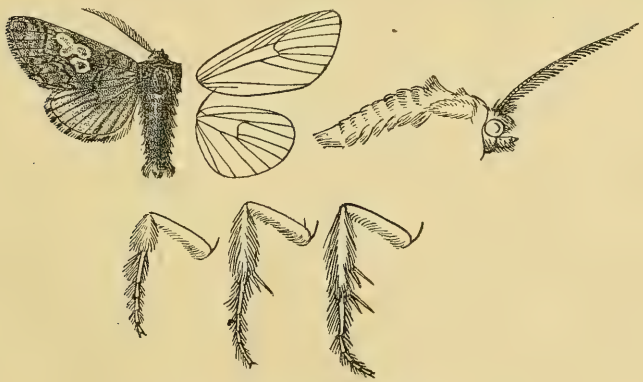


Fig. 130.—*Episema cæruleocephala*, ♂. ½.

antennæ with the shaft whitish; abdomen reddish brown, the anal tuft with some grey. Fore wing purplish red-brown tinged with grey, the medial area rather darker, the base and terminal area

greyer; a dark brown streak above base of vein 1 and a streak on inner margin except towards base; antemedial line dark brown, strongly excurved below costa and submedian fold and slightly incurved at vein 1; orbicular and reniform white with greenish blue centres, the former conjoined to a similar spot below the cell and forming a figure-of-eight-shaped mark, also connected with the reniform which is connected with the costa by a white patch; postmedial line dark brown, strongly bent outwards below costa, then double and slightly oblique to vein 4, then single, very oblique, and waved, some white striæ with dark streaks between them beyond it on costa; subterminal line whitish, waved, angled outwards at veins 7, 6, 4, 3; a waved dark brown terminal line; cilia grey intersected with dark brown at the veins. Hind wing white tinged and irrorated with brown especially in female, the veins and a discoidal spot brown; a chocolate-brown streak in extremity of submedian fold and on the cilia beyond it; the underside with the discoidal spot more distinct, a postmedial line excurved to vein 5, then obliquely incurved.

Ab. 1. *armena*. Paler, the fore wing grey.

Ab. 2. *bipartita*. Fore wing with the orbicular and reniform separate.

Ab. 3. *orbimaculata*. Fore wing with a small round white mark before the orbicular.

Hab. Britain, Leech Coll., Ireland (*Salvage*); France; Germany, Zeller, Frey, and Leech Colls.; Austria; Hungary; Switzerland; Italy; Malta (*B.-Fletcher*); Greece; Balkan States; Scandinavia; Russia, Livonia, Zeller Coll.; Armenia; Asia Minor, Pontus; Syria. *Exp.* 38–46 millim.

Larva. Meyr. Lep. Brit. p. 56; Barrett, Brit. Lep. iii. p. 177, pl. 115. f. 2. Blue-grey; dorsal line yellow, interrupted; spiracular line yellow; warts black. Food-plants, Hawthorn and Blackthorn. 4–6.

Species omitted.

Plusia dispellens, Wlk. xxxiii. 838 (1865). Type lost.. Ceylon.

„ *hildebranti*, Saalm. Lep. Madag. p. 392 (1891). Madagascar.

„ *incompta*, Wlk. Char. Undescr. Het. p. 40 (1869). Type lost ..... Hab. ign.

„ *incrassata*, Herr.-Schäff. Corresp.-blatt. zool.-min. Ver. Regensb. xxii. p. 184 (1868). ? = *Phytometra bimaculata* ..... Cuba.

„ *litterata*, Pag. Jahrb. Nass. Ver. xli. p. 137 (1888). Amboina.

„ *melanocephala*, Möschl. Verh. zool.-bot. Ges. Wien, xxxiii. p. 297, pl. xvi. f. 11 (1884). ? = *Phytometra limbirena*. Cape Colony.

„ *modesta*, Wlk. Char. Undescr. Het. p. 40 (1869). Type lost..... Peru.

„ *temperata*, Wlk. Char. Undescr. Het. p. 41 (1869). Type lost ..... Hab. ign.

ALPHABETICAL INDEX.

[Synonyms are printed in *italics*.]

abeluxalis (*Hormisa*), 108.
abeona (*Plusia*), 436.
ablusa (Phytometra), 475.
ablusa (*Plusia*), 475.
Abrostola, 582.
abrostolina (Abrostola), 589.
abrostolina (*Inguridia*), 589.
abrostoloides (*Plusidia*), 450.
abrota (Phytometra), 493.
abrota (*Plusia*), 493.
abscisa (Safia), 194.
abscondens (*Cœnipeta*), 254.
abscondens (Hypogrammodes), 254.
Acanthodelta, 12.
acatharta (Elæodes), 357.
accentifera (Phytometra), 492.
accentifera (*Plusia*), 492.
acharia (*Noctua*), 193.
acharia (Safia), 193.
acronyctoides (*Audela*), 367.
acronyctoides (Diphthera), 367.
acrosticta (*Pericyma*), 318.
acuta (*Baratha*), 84.
acuta (Phytometra), 499.
acuta (*Plusia*), 499.
acutaria (*Ligia*), 114.
acutata (*Trigonodes*), 27.
adjuncta (*Plusia*), 484.
admonens (Phytometra), 520.
admonens (*Plusia*), 520.
adrasta (*Plusia*), 438.
adrasta (Plusiopalpa), 438.
adscripta (*Plusia*), 517.
adusta (Cænurgia), 68.
adusta (*Poaphila*), 68.
adversa (*Litosea*), 69.
æmona (*Homoptera*), 208, 209.
æmula (*Noctua*), 430, 554.
æmula (Phytometra), 554.
ænea (Safia), 335.
æneofusa (Phytometra), 459.
æneofusa (*Plusia*), 459.
æolia (*Cœnipeta*), 256.
æolia (Hypogrammodes), 256.
ærea (*Noctua*), 575.
ærea (Phytomtra), 575.
æreoides (Phytometra), 572.
æreoides (*Plusia*), 572.
ærifera (*Noctua*), 576.
æruginosa (*Ypsia*), 229.
æruginosa (Zale), 229.
agnata (*Plusia*), 484.
Agnomonia, 151.
agonia (Parachalciope), 40.
agramma (*Plusia*), 573.
Agrapha, 452.
agrapta (Phurys), 108.
agricola (*Drasteria*), 71.
agualaniata (Phytometra), 516.
agualaniata (*Plusia*), 516.
ain (*Noctua*), 414.
ain (Syngrapha), 414.
ainu (Moma), 379.
alaica (*Plusia*), 408.
Alamis, 297.
albavitta (*Autographa*), 570.
albavitta (Phytometra), 570.
albicincta (*Alamis*), 301.
albidens (*Mœpa*), 298.
albidens (Pericyma), 298, 309.
albidentaria (*Acidalia*), 309.
albidentaria (Pericyma), 309.
albidiscata (Lichnoptera), 392.
albidiscata (*Panthea*), 392.
albidiscata (Safia), 192.
albidiscata (*Yrias*), 192.
albidula (*Homoptera*), 227.
albidula (Zale), 227.
albifissa (*Chalciope*), 36.
albifios (Homoptera) 333.
albiplaga (Trisuloides) 344.
albitessellata (Trisuloides), 348.
albizona (*Noctua*), 161.
albizona (Ramphia), 161.
albofasciata (*Homoptera*), 234.
albopunctella (Cutina), 157.

albostriata (Phytometra), 496.
albostriata (*Plusia*), 496.
alcyona (Euclidisema), 43.
alcyona (*Grammodes*), 43.
alepica (*Plusia*), 538.
algiriæ (*Cerocala*), 270.
alias (*Autographa*), 424.
alias (Syngrapha), 424.
alipes (*Remigia*), 79.
altera (*Autographa*), 429.
altera (Syngrapha), 429.
alterna (*Euclidia*), 95.
alterna (Mocis), 95.
alterna (*Plusia*), 570.
alticola (Caloplusia), 407.
alticola (*Plusia*), 407.
alvina (*Mocis*), 132.
alypophanes (*Remigia*), 144.
amabilis (Ophisma), 334.
amarygma (*Ramphia*), 161.
amata (*Homoptera*), 188, 219.
amata (Safia), 188.
amazonica (*Lacera*), 180.
amazonica (Safia), 180.
amella (*Campometra*), 188.
amella (Safia), 188.
amideta (Anua), 335.
ammonia (*Phalæna*), 18.
ampla (Phytometra), 570.
ampla (*Plusia*), 570.
amplissima (*Poaphila*), 118, 126.
amurica (*Plusia*), 535.
Anacronicta, 339.
anargyra (*Plusia*), 475.
ancora (*Noctua*), 535.
anda (Phytometra), 550.
anda (*Plusia*), 550.
anfractuosa (*Ophiusa*), 27.
angolensis (Chalciope), 333.
angulidens (*Plusia*), 427.
angulidens (Syngrapha), 427.
angulosa (*Euclidia*), 54.
angulum (Phytometra), 471.
angulum (*Plusia*), 471.
anilis (Argyrostrotis), 156.
anilis (*Noctua*), 156.
Anisoneura, 260.
annetta (Mocis), 102.
annetta (*Remigia*), 102.
annexa (*Euclidia*), 48.
annexa (Euclidimera), 48.
annulifera (*Mouralia*), 592.
Anophiodes, 332.
anophioides (Abrostola), 588.
Anthracia, 207.
antica (*Homoptera*), 303.
antillesia (Mocis), 79.
Anydrophila, 264.
aperta (*Homoptera*), 183.
aperta (Safia), 183.
aquamarina (*Euclidia*), 49.
arachnoides (Phytometra), 558.
arachnoides (*Plusia*), 558.
aranea (Phytometra), 559.
aranea (*Plusia*), 559.
arbosi (Gaujonia), 386.
arbosioides (Gaujonia), 386.
archesia (*Phalæna*), 91.
arctica (*Autographa*), 426.
arctica (Syngrapha), 426.
arcuata (Nymbis), 116.
arcuata (*Phurys*), 116.
arenosa (Clytie), 294.
arenosa (Grammodes), 17.
argenteo-guttata (*Plusia*), 517.
argentifera (Phytometra), 489.
argentifera (*Plusia*), 489.
argyritis (*Noctua*), 444.
argyrodonta (Phytometra), 555.
argyrodonta (*Plusia*), 555.
argyrosigna (Phytometra), 515.
argyrosigna (*Plusia*), 515.
Argyrostrotis, 151.
armena (*Diloba*), 593.
artica (*Plusia*), 432.
asclepiadea (*Noctua*), 585.
asclepiadis (Abrostola), 586.
asclepiadis (*Noctua*), 586.
asseverans (*Phurys*), 108.
associata (*Remigia*), 91.
atrata (*Plusia*), 410.
atrifrons (Lichnoptera), 397.
atrifusa (*Homoptera*), 305.
atrifusa (Pericyma), 305.
atritincta (*Homoptera*), 229.
Attatha, 8.
Audela, 365.
augusta (Phytometra), 562.
augusta (*Plusia*), 562.
aurantiaca (*Euclidia*), 53.
aurantiaca (Omorphina), 403.
aurata (Chrysoptera), 444.
aurata (*Plusia*), 444.
aurea (*Noctua*), 571.
aurea (*Plusia*), 578.
aurifera (*Noctua*), 580.
aurinia (*Mocis*), 132.
aurosignata (*Phalæna*), 431.
australis (Zale), 237.
Autographa, 404.
Avatha, 58.
azteca (*Hadræcia*), 163.
azteca (Safidia), 163.

babooni (*Plusia*), 473.
bahamica (Mocis), 81.
balluca (*Dyachrysia*), 577.
balluca (Phytometra), 577.
balnearia (Cortyta), 317.
balnearia (*Polydesma*), 317.
baltica (*Plusia*), 535.
barata (Safia), 195.
barata (*Yrias*), 195.
Baratha, 76.
bartholomæii (*Plusia*), 535.
basicincta (*Brujas*), 161.
basigera (Phytometra), 486.
basigera (*Plusia*), 486.
basilans (Phurys) 108.
basileuca (*Poaphila*), 121.
Bathyra, 382.
beckeri (*Plusia*), 565.
bella (Phytometra), 545.
bella (*Plusia*), 545.
bellieri (*Plusia*), 567.
benenotata (Hypoglaucitis), 288.
benenotata (*Pandesma*), 288.

benesignata (*Homoptera*), 238.
benesignata (Zale), 238.
bengalensis (*Noctua*), 484.
benitensis (*Grammodes*), 37.
benitensis (Parachalci pe), 37.
beta (*Leucanitis*), 284.
bethunei (*Phœocyma*), 240.
bethunei (Zale), 240.
bidens (Safia), 199.
bidens (*Xylis*), 199.
bieti (*Plusia*), 575.
bifasciata (*Celiptera*), 110.
bifasciata (*Noctua*), 19.
bifasciata (*Remigia*), 91.
bigutta (Nymbis), 128.
bigutta (*Phurys*), 128.
bigutta (*Plusia*), 514.
biloba (Phytometra), 512.
biloba (*Plusia*), 512,
bimaculata (Phytometra), 530, 594.
bimaculata (*Plusia*), 530.
binaria (Parachalciope), 36.
binaria (*Trigonodes*), 36.
binotula (*Plusia*), 522.
bipartita (*Diloba*), 593.
bipartita (Phytometra), 482.
bipartita (*Plusia*), 482.
bipunctata (Focillidia), 149.
bipunctata (*Thermesia*), 149.
bisinuata (Euclidisema), 41.
bisinuata (*Grammodes*), 41.
bistrialis (*Agriphila*), 114.
bistrialis (Doryodes), 114.
bistriga (Phurys), 109.
bistrigata (Phurys), 111.
bistrigata (*Ptichodes*), 111.
boisdeffrei (Grammodes), 24.
boisdeffrei (*Ophiusa*), 24.
bonaerensis (Phytometra), 511.
bonaerensis (*Plusia*), 511.
borea (*Plusia*), 416.
borealis (*Plusia*), 431.
brachychalcea (Phytometra), 481.
bractea (*Noctua*), 551.
bractea (Phytometra), 551.
bractea (*Plusia*), 552.
brassicæ (Phytometra), 467.
brassicæ (*Plusia*), 467.
brevicornis (Elæodes), 358.
brevicornis (*Xanthia*), 358.
brevipennis (Abrostola), 591.
brevipennis (Homoptera), 333.
brevipennis (*Xylina*), 591.
bruma (Safia), 185.
brunca (Safia), 173.
brunca (*Yrias*), 173.
bucetum (Argyrostrotis), 152.
bucetum (*Celiptera*), 152.
buchholzi (*Plusia*), 484.
burætica (*Plusia*), 534.

cabylaria (Leucanitis), 280.
cades (Safia), 205.
cades (*Selenis*), 205.
cæca (*Grammodes*), 17.
cælata (Cerocala), 268.
Cænurgia, 65.
cærulea (*Drasteria*), 49.
cærulea (Euclidimera), 49.
cæruleocephala (*Bombyx*), 593.
cæruleocephala (Episema), 593.
calberlæ (*Plusia*), 565.
c-album (*Tambana*), 356.
c-album (Trisuloides), 356.
calceolaris (Phytometra), 490.
calceolaris (*Plusia*), 490.
calida (*Chalciope*), 142.
californica (Phytometra), 540.
californica (*Plusia*), 540.
caliginea (*Aplectoides*), 352.
caliginea (Trisuloides), 352.
Calocasia, 360.
Caloplusia, 405
calycanthata (*Phalæna*), 246.
calycanthata (Zale), 246.
Calyptis, 138.
caminata (*Campometra*), 186.
caminata (Safia), 186.
campanilis (Phurys), 112.
Campometra, 165.
camptogamma (Plusiopalpa), 438.
camptogamma (*Polychrysia*), 438.
camptosema (Phytometra), 523.
canariensis (Abrostola), 590.
candida (*Celiptera*), 128.
candida (Nymbis), 128.
canescens (Cortyta), 321.
carolina (Phurys), 113.
cashmirensis (*Euchalcia*), 567.
cashmirensis (Phytometra), 567.
Catephioides, 332.
catocalina (*Tambana*), 346.
catocalina (Trisuloides), 342, 346.
Catocalinæ, 1.
caudata (Phytometra), 489.
caudata (*Plusia*), 489.
Cauninda, 76.
c-aureum (Chrysoptera), 442.
c-aureum (*Phalæna*), 442.
cavillator (*Diphtera*), 391.
cavillator (Lichnoptera), 391.
cavillator (*Panthea*), 393.
cebeæ (Phytometra), 495.
cebeana (Phytometra), 499.
celia (*Phalæna*), 184.
celia (Safia), 184.
Celiptera, 130.
celsa (*Plusia*), 422.
celsa (Syngrapha), 422.
cephise (Chalciope), 30.
cephise (*Noctua*), 30.
Cerocala, 268.
certa (*Plusia*), 406.
chalcedona (Phytometra), 464.
chalcedona (*Plusia*), 464.
Chalciope, 26.
chalciptera (*Noctua*), 19.
chalcopasta (Phytometra), 456.
chalcopasta (*Plusia*), 456.

chalcytes (*Noctua*), 484.
chalcytes (Phytometra), 484.
chalcytis (*Noctua*), 484.
chalsytis (*Plusia*), 515.
chalybeata (Safia), 190.
champa (Moma), 378.
champa ab. *diffusa* (*Moma*), 378.
champa var. *ainu* (*Moma*), 379.
Charadra, 371.
chavannesi (Bathyra), 384.
chavannesi (*Panthea*), 384.
cheiranthi (*Noctua*), 450.
cheiranthi (Plusidia), 450.
chilensis (*Plusia*), 434.
chillagoes (*Plusia*), 460.
chionosticta (Gonodontodes), 146.
christophi (Leucanitis), 283.
Chrysaspidia, 452.
chrysitina (*Noctua*), 580.
chrysitis (*Noctua*), 578.
chrysitis (Phytometra), 578.
Chrysodeixis, 452.
chrysomelas (*Noctua*), 554.
chryson (*Noctua*), 571, 576.
chryson (Phytometra), 576.
Chrysoptera, 439.
chrysostigma (*Omorphina*), 403.
ciliaris (*Plusia*), 477.
cilipes (*Dugaria*), 305.
cinerea (*Homoptera*), 232, 333.
cingularis (*Noctua*), 21.
cingulifera (*Homoptera*), 246.
cingulifera (Zale), 246.
circulifera (*Acronycta*), 373.
circumflexa (*Noctua*), 432, 514.
circumflexa (Syngrapha), 432.
circumscripta (Phytometra), 465.
circumscripta (*Plusia*), 465.
clarci (Phytometra), 528.
clarci (*Plusia*), 528.
clarissa (*Plusia*), 587.
clementi (*Grammodes*), 16.
Clytie, 289.
coactilis (*Phurys*), 121.
codo (Celiptera), 137, 333.
cœnobita (*Bombyx*), 366.
cœnobita (Diphthera), 366.
cœnochroa (Safia), 173.
cœrulea (Trisuloides), 343.
cœruleotincta (Safia), 196.
cohærens (*Plusia*), 484.
Colbusa, 11.
collata (*Remigia*), 84.
collateralis (*Plusia*), 494.
colorado (*Phœocyma*), 245.
colorado (Zale), 245.
cometephora (Celiptera), 133.
comma (*Plusia*), 469.
commidendri (*Habrostola*), 557.
compar (*Trigonodes*), 28.
complacens (*Hypætra*), 63.
complens (Hypætra), 59.
concha (*Noctua*), 442.
configurata (*Homoptera*), 219.
configurata (Zale), 219.
confusa (*Hypogramma*), 255.
confusa (Hypogrammodes), 255.
confusa (Phytometra), 514.
confusa (*Plusia*), 473, 514.
congenita (Grammodes), 18.
consona (*Noctua*), 569.
consona (Phytometra), 569.
consors (*Euclidia*), 52.
conspicua (*Drasteria*), 48.
contempta (Argyrostrotis), 155.
contempta (*Poaphila*), 155.
contexta (Phytometra), 510.
contexta (*Plusia*), 510.
contigua (*Charadra*), 373.
continua (*Alamis*), 301.
continua (Phurys), 335.
contraria (Cerocala), 278.
contraria (*Poaphila*), 278.
convalescens (Cœnurgia), 67.
convalescens (*Drasteria*), 67, 68.
conveniens (*Remigia*), 84.
cooma (Grammodes), 20.
copiola (*Mocis*), 126.
copiola (Nymbis), 126.
coracias (*Anthracia*), 232.
coracias (Zale), 232.
cornelia (*Acronicta*), 345.
cornelia (Trisuloides), 345.
cornix (*Anthracia*), 232.
cornucopiæ (*Plusia*), 557.
Cortyta, 312.
corusca (Phytometra), 529.
corusca (*Plusia*), 529.
corvus (*Pseudanthracia*), 231.
corvus (Zale), 231.
coryli (*Bombyx*), 361.
coryli (Calocasia), 361.
costifera (Homoptera), 333.
crassipalpus (*Plusia*), 438.
crassiuscula (Cœnurgia), 73.
crassiuscula (*Phytometra*), 73.
crespula (Yrias), 335.
crestonion (*Grammodes*), 44.
Crochiphora, 105.
Cropia, 334.
cruegeri (*Homoptera*), 299.
cruegeri (Pericyma), 299.
cubana (Mocis), 80.
culta (*Plusia*), 522.
cumamita (*Chalciope*), 33.
cumamita (Cuneisigna), 33.
Cuneisigna, 31.
cuprea (*Noctua*), 563, 564.
cupreomicans (Phytometra), 464.
cupreomicans (*Plusia*), 464.
curema (*Phœocyma*), 239.
curema (Zale), 239.
curvifera (*Hypætra*), 63.

curvilinea (*Grammodes*), 22.
cuspidea (*Drasteria*), 51.
cuspidea (*Euclidia*), 52.
cuspidea (Gonospileia), 51.
Cutina, 157.
Cymosafia, 158.

dalei (Phytometra), 521.
dalei (*Plusia*), 521.
dasynota (*Achæa*), 252.
dasynota (Tolnaodes), 252.
daubei (Phytometra), 477.
daubei (*Plusia*), 432, 477.
deaurata (*Noctua*), 571.
deaurata (Phytometra), 571.
decessa (*Homoptera*), 193, 194, 206.
decessa (Safia), 193.
declarans (*Homoptera*), 227.
declarans (Zale), 227.
decora (*Charadra*), 389.
decora (Lichnoptera), 389.
deleta (Argyrostotis), 155.
deleta (*Poaphila*), 155.
deliana (*Phalæna*), 27.
delineosa (*Homoptera*), 305.
delinquens (*Ophiusa*), 84.
delta (Euclidisema), 44.
delta (*Ophiusa*), 44.
deltifera (Parachalciope), 36.
delunaris (Clytie), 296.
delunaris (*Pseudophia*), 296.
Demas, 360.
demera (*Placonia*), 169.
demera (Safia), 169.
demonstrans (*Remigia*), 93.
dentata (*Euclidia*), 52.
dentata (Gonospileia), 52.
dentifera (*Chalciope*), 36.
dentilinea (*Phurys*), 127.
depauperata (*Plusia*), 410.
deridens (Charadra), 373.
deridens (*Diphtera*), 373.
detersa (*Homoptera*), 307.
detersa (Pericyma), 307.
detersa (*Remigia*), 84.
detrusa (*Plusia*), 410.
devergens (Caloplusia), 407.
devergens (*Noctua*), 407.
devia (Clytie), 290.
devia (*Pandesma*), 290.
Diachrysia, 452.
diagonalis (Cænurgia), 71.
diagonalis (*Euclidia*), 71.
diagramma (Ophiusa), 334.
diapera (Cortyta), 314.
diasema (*Autographa*), 416.
diasema (*Plusia*), 416.
diasema (Syngrapha), 416.
dichora (*Plusiopalpa*), 438.
diffluens (Mocis), 86.
diffluens (*Remigia*), 81, 84, 86, 127.
diffundens (Argyrostrotis), 153.
diffundens (*Hypætra*), 91.
diffundens (*Mocis*), 153.
digona (Ophiusa), 334.
Diloba, 593.
dimera (*Celiptera*), 130.
dimera (Nymbis), 130.
diminuta (*Plusia*), 491.
dinawa (*Plusia*), 484.
diodonta (Safia), 198.
Diphtera, 365.
Diphthera, 365.
Diplocyma (Mocis), 101.
discios (Mocis), 104.
discios (*Ophiusa*), 104.
discisigna (*Homoptera*), 208.
discisigna (Zale), 208.
discissa (*Remigia*), 136.
discolor (Hypætra), 63.
discolor (*Noctua*), 53.
discrepans (*Remigia*), 93.
disjuncta (Chalciope), 26.
disjuncta (*Homoptera*), 305.
disjuncta (*Plusia*), 578.
dispar (Cortyta), 315.
dispar (Gonodontodes), 147.
dispar (*Noctua*), 147.
dispar (*Pericyma*), 315.
dispellens (Plusia), 594.
dispulsa (Charadra), 376.
disseverans (Mocis), 83.
disseverans (Remigia), 83.
dissocians (*Phurys*), 126.
dissocians (*Poaphila*), 110.
distalagma (Phytometra), 480.
disticta (Phytometra), 560.
distilla (*Campometra*), 188.
distincta (Cænurgia), 74.
distincta (Clytie), 293.
distincta (*Drasteria*), 74.
distincta (*Pseudophia*), 293.
distriga (Acanthodelta), 13.
ditrigona (*Chalciope*), 39.
divaricata (*Homoptera*), 203.
divaricata (Safia), 203.
divergens (*Noctua*), 408.
dives (Phytometra), 526.
dives (*Plusia*), 526.
dividua (Poaphila), 335.
divisa (Hypætra), 334.
divisa (*Themma*), 115.
dohertyi (*Pterochæta*), 60.
dolosa (Mocis), 95.
dolosa (*Plecoptera*), 95.
dorfmeisteri (Phytometra), 467.
dorfmeisteri (*Plusia*), 467.
dorsiflava (Phytometra), 561.
dorsiflava (*Plusia*), 561.
Doryodes, 113.
dubitans (*Euclidia*), 23.
dudgeoni (Phytometra), 544.
Dugaria, 297.
dukinfieldia (*Homoptera*), 232.
duplicata (*Homoptera*), 240.
duplicata (Zale), 240.
durfa (Achæa), 333.
dyari (*Euclidia*), 70.
dyaus (*Plusia*), 522.

echinocystis (*Plusia*), 467.
edusa (*Homoptera*), 214.
edusa (*Noctua*), 223.
edusina (*Homoptera*), 229.
edusina (Zale), 229.
egena (*Plusia*), 435.

egena (Syngrapha), 435.
egenella (*Plusia*), 436.
egenella (Syngrapha), 436.
ekeikei (*Plusia*), 482.
Elæodes, 356.
electa (Calocasia), 363.
electa (*Demas*), 363.
electaria (*Doryodes*), 77.
electaria (Mocis), 77.
elongatus (*Litomitus*), 136.
Elydnodes, 399.
emathion (Euclidisema), 43.
emathion (*Grammodes*), 43.
emichi (Phytometra), 561.
emichi (*Plusia*), 561.
eminens (Safia), 204.
endomelas (Safia), 168.
Enmonodia, 334.
entoxantha (*Moma*), 349.
entoxantha (Trisuloides), 349.
Eosphoropteryx, 446.
Epicausis, 337.
epigæa (*Plusia*), 421.
epigæa (Syngrapha), 421.
Episema, 593.
epsilon (*Plusia*), 425.
equatorialis (*Sypna*), 249.
equatorialis (Sypnoides), 249.
erasa (Argyrostrotis), 154.
erasa (*Poaphila*), 154.
Erchcia, 332.
Erebus, 331.
erechtea (Cænurgia), 71.
erechtea (*Phalæna*), 71.
erecta (*Chalciope*), 41.
erecta (Euclidisema), 41.
eremochroa (Cortyta), 318.
eremochroa (*Homoptera*), 318.
erichto (*Drasteria*), 73.
eriosoma (*Plusia*), 484.
erubescens (Poaphila), 335.
escondida (Mocis), 101.
escondida (*Phurys*), 101.
esculeata (Ophisma), 334.
esmeralda (*Plusia*), 444.
ethiopica (Attatha), 10.
ethiopica (Hypætra), 61.
Eubolina, 324.
Euchaicia, 452.
Euclidia, 50.
euclidica (Colbusa), 11.
euclidicola (*Fodina*), 35.
euclidicola (Parachalciope), 35.
Euclidimera, 45.
euclidioides (Grammodes), 23.
Euclidisema, 40.
eugenia (*Plusia*), 450.
eugrapha (Phytometra), 474.
eversmanni (*Plusia*), 567.
evinga (*Ramphia*), 161.
exarata (*Polydesma*), 310.
excellens (*Grammodes*), 15.
excellens (*Homoptera*), 235.
excellens (Zale), 235.
excelsa (*Autographa*), 427.
excelsa (Phytometra), 553.
excelsa (*Plusia*), 553.
excelsa (Syngrapha), 427.
exclusiva (*Grammodes*), 18.
exhausta (*Homoptera*), 213, 216, 217.
exhausta (Zale), 213.
expectans (*Achæa*), 63.
explanata (*Euclidia*), 46.
exportata (*Trigonodes*), 28.
exquisita (Phytometra), 547.
exquisita (*Plusia*), 547.
exscindens (*Remigia*), 84.
extrahens (*Plusia*), 468.
extrema (*Euclidia*), 46.

falcifera (*Plusia*), 419.
falcifera (Syngrapha), 419.
falcigera (*Plusia*), 419.
fascialis (*Noctua*), 53.
fasciolata (Cortyta), 316.
fasciolata (*Pericyma*), 315.
feisthameli (*Plusia*), 436.
feisthameli (Syngrapha), 436.
felina (Lichnoptera), 389, 390, 391.
feronia (*Cœnipeta*), 256.
feronia (Hypogrammodes), 256.
festata (Phytometra), 508.
festata (*Plusia*), 508.
festucæ (*Noctua*), 507.
festucæ (Phytometra), 507.
fictilis (*Homoptera*), 216.
fictilis (Zale), 216.
figurata (Poaphila), 335.
flagellum (Phytometra), 541.
flagellum (*Plusia*), 541.
flavago (*Noctua*), 444.
flavala (*Acronycta*), 350.
flavala (Trisuloides), 350.
flavicornis (Calocasia), 362.
flavicornis (*Demas*), 362.
flavistriaria (*Crochiphora*), 112.
flavistriaria (Phurys), 112.
flexa (Nymbis), 127.
flexa (*Phurys*), 127.
florina (Phytometra), 579.
florina (*Plusia*), 579.
fluctuaris (*Noctua*), 223.
focillatrix (Homoptera), 333.
Focillidia, 148.
formosa (Abrostola), 583.
formosa (*Leptina*), 583.
fortalitium (Cænurgia), 66.
fortalitium (*Noctua*), 66.
fortatilium (*Noctua*), 66.
fortificata (*Noctua*), 53.
fracta (Phytometra), 459.
fracta (*Plusia*), 459.
fratella (*Plusia*), 542.
fraxini (Catocala), 330.
fraxini ab. *sternecki* (*Catocala*), 330.
frontalis (*Ophiusa*), 63.
frugalis (Mocis), 87.
frugalis (*Noctua*), 87.
frustulum (Celiptera), 136.
fuliginosa (*Homoptera*), 220.
fuliginosa (Zale), 220.
fumata (*Euclidia*), 53.
fumifera (*Plusia*), 410, 573.
furcifera (*Mecodina*), 35.
furcifera (Phytometra), 473.
furcifera (*Plusia*), 473.
furcilla (Diphthera), 368.
furcilla (*Platycerura*), 368.

fuscilineata (*Celiptera*), 119.
fuscilineata (Nymbis), 119.
fuscipalpis (Poaphila), 335.
fuscipennis (*Tambana*), 353.
futilis (*Euclidia*), 48.
futilis (Euclidimera), 48.

galactea (Zale), 215.
galbanata (*Homoptera*), 228.
galbanata (Zale), 228.
gamma (*Noctua*), 538.
gamma (Phytometra), 538.
gamma (*Plusia*), 472, 539.
gammaloba (Phytometra), 463.
gammaloba (*Plusia*), 463.
gammina (*Plusia*), 538.
gammoides (*Plusia*), 434, 534.
gammoides (Syngrapha), 434.
garnoti (Nymbis), 123.
garnoti (*Phurys*), 123.
Gaujonia, 335.
geminipuncta (Phytometra), 520.
geminipuncta (*Plusia*), 520.
generosa (Phytometra), 566.
generosa (*Plusia*), 566.
gentilis (*Pseudophia*), 297.
gentilitia (*Ophiusa*), 294.
geometrica (Grammodes), 18.
geometrica (*Noctua*), 18.
gerda (Phytometra), 455.
gerda (*Plusia*), 455.
gigantea (Diphthera), 369.
gigantea (*Platycerura*), 369.
glans (*Phurys*), 112.
glauca (Hypogrammodes), 258.
glauca (*Noctua*), 258.
glauca (Trisuloides), 354.
glaucinans (*Alamis*), 303.
glaucinans (Pericyma), 303.
glaucofascia (*Cropia*), 59.
glaucoides (*Cœnipeta*), 259.
glaucoides (Hypogrammodes), 259.
glyphica (Gonospileia), 52.
glyphica (*Noctua*), 52.
Gnamptonyx, 286.
Gonodontodes, 146.
Gonospileia, 50.
gorilla (Phytometra), 497.
gorilla (*Plusia*), 497.
gracilis (*Moma*), 391.
gracilis (*Pseudophia*), 291.
gradata (*Homoptera*), 216.
Grammodes, 13.
grammoides (*Plusia*), 534.
graphica (*Plusia*), 432.
grata (Zale), 218.
gratiosa (Homoptera), 333.
gregalis (*Remigia*), 91.
grenadensis (Focillidia), 150.
grisea (Cortyta), 322.
grisea (Diphthera), 367.
grisea (*Panthea*), 367.
grisea (*Polydesma*), 322.
griseicilia (Plecopterodes), 143.
griseicilia (*Remigia*), 143.
griseomaculata (Hypætra), 334.
grisescens (Celiptera), 134.
grisescens (*Mocis*), 134.
grœnlandica (*Plusia*), 432.
grœnlandica (Syngrapha), 432.
g-roseum (*Plusia*), 478.
guadulpensis (*Homoptera*), 216.
guapila (*Campometra*), 196.
guapila (Safia), 196.
guayaquilata (Safia), 171.
guenei (Remigia), 335.
gulo (Lichnoptera), 394.
gutta (*Plusia*), 513, 514.
gypsochroa (Moma), 379.

haifæ (Clytie), 292.
haifæ (*Pseudophia*), 292.
hamifera (*Plusia*), 522.
hampsoni (Phytometra), 560.
hampsoni (*Plusia*), 560.
hebetata (Phytometra), 574.
hebetata (*Plusia*), 574.
helata (*Phœocyma*), 240.
helveola (*Phurys*), 117.
helvina (Nymbis), 117.
helvina (*Phurys*), 117, 118, 125.
hemichalcea (Phytometra), 466.
hemidelta (*Trigonodes*), 32.
herbarum (Phurys), 110.
herbarum (*Poaphila*), 110.
herbicola (Argyrostrotis), 153.
herbicola (*Poaphila*), 153.
herrichi (Phytometra), 567.
herrichi (*Plusia*), 567.
heterochroa (Plecopterodes), 142.
heterochroa (*Remigia*), 142.
hexastylus (*Remigia*), 83.
hildebranti (Plusia), 594.
hochenvarthi (Caloplusia), 408.
hochenwarthi (*Phalæna*), 408.
Homoptera, 207.
Homopyralis, 333.
honrathi (*Diphthera*), 345.
hoplitis (*Grammodes*), 43.
horrida (Zale), 247.
humeralis (*Plusia*), 575.
humilis (*Plusia*), 468.
hutsonii (*Behrensia*), 570.
Hypætra, 58.
hypocyanea (Anisoneura), 260.
Hypoglaucitis, 287.
Hypogrammodes, 253.
hypophæa (*Alamis*), 301.
hyppasia (Chalciope), 27.
hyppasia (*Noctua*), 27.

ibona (Ophisma), 334.
idonea (Calyptis), 138.
idonea (*Noctua*), 138.
ignea (Caloplusia), 409.
ignea (*Plusia*), 409.
illudens (*Diphtera*), 394.
illudens (Lichnoptera), 394.
illunaris (Clytie), 291.

illunaris (*Noctua*), 291.
illustrata (Cerocala), 270.
illustrata (*Plusia*), 437.
illustrata (Syngrapha), 437.
illustris (*Noctua*), 563.
imitatrix (Anydrophila), 267.
imitatrix (*Palpangula*), 267.
imminua (Euclidisema), 41.
imminua (*Grammodes*), 41.
immunis (Phurys), 106.
immunita (*Euclidia*), 54.
impar (Cortyta), 317.
impartialis (Eubolina), 325.
impressa (*Remigia*), 73.
impulsa (Phytometra), 487.
impulsa (*Plusia*), 487.
inacuta (*Trigonodes*), 28.
inchoata (*Plusia*), 573.
incipiens (*Letis*), 209.
includens (*Avatha*), 63.
includens (*Plusia*), 522.
incompleta (*Plusia*), 415.
incompta (Plusia), 594.
inconcisa (*Remigia*), 91.
inconspicua (Hypopyra), 334.
inconspicua (Phytometra), 566.
inconspicua (*Plusia*), 566.
inconspicua (Safia), 335.
incrassata (Plusia), 594.
indenta (*Remigia*), 84.
indicator (Phytometra), 478.
indicator (*Plusia*), 478.
indigna (*Plusia*), 494.
infanta (Calocasia), 364.
infanta (*Demas*), 364.
infausta (*Mamestra*), 353.
infausta (Trisuloides), 353.
infecta (*Celiptera*), 109.
infecta (Phurys), 109.
inferna (Mocis), 98.
inferna (*Remigia*), 98.
inficita (Nymbis), 120.
inficita (*Phurys*), 120.
infligens (*Homoptera*), 303.
infrequens (Hypoglaucitis), 289.
infrequens (*Orthosia*), 289.
ingenua (Charadra), 373.
Inguridia, 582.
iniqua (Nymbis), 121.
innata (*Plusia*), 469.
ino (Attatha), 9.
ino (*Noctua*), 9.
inornata (Mocis), 99.
inornata (*Trigonodes*), 99.
insana (Cerocala), 270, 271.
insana (*Grammodes*), 270.
inscripta (*Noctua*), 535.
insolita (*Plusia*), 541.
insuda (*Phæocyma*), 233.
insuda (Zale), 233.
insularia (Doryodes), 114.
insulsa (*Grammodes*), 96.
integerrima (*Homoptera*), 188.
integra (*Plusia*), 484.
intenta (*Homoptera*), 246.
intercalaris (Cænurgia), 70.
intercalaris (*Euclidia*), 70.
interrogationis (*Noctua*), 430.
interrogationis (Syngrapha), 430.
interscalaris (*Plusia*), 532.
intracta (*Plusia*), 520.
intractata (*Plusia*), 443.
involuta (*Homoptera*), 234.
iota (*Noctua*), 534, 535.
iota (Phytometra), 535.
irresoluta (*Rhubuna*), 201.
irresoluta (Safia), 201.
irrorata (*Poaphila*), 153.
isosceles (*Trigonodes*), 43.
italica (*Plusia*), 565.
iter (Calyptis), 140.

jagowi (*Abrostola*), 586.
jaliscana (Nymbis), 126.
jaliscana (*Phurys*), 126.
janata (Geometra), 332.
janisca (*Homoptera*), 232.
janisca (Zale), 232.
jessica (Phytometra), 545.
jessica (*Plusia*), 545.
judicans (*Ophiusa*), 96.
jugalis (*Remigia*), 91.
jugis (Nymbis), 124.
jugis (*Phurys*), 124, 125.
juncta (*Plusia*), 578.
justa (Grammodes), 17.
juvenilis (*Agnomonia*), 44.
juvenilis (Leucomelas), 44.

kahylaria (*Leucanitis*), 280.
kalitura (*Plusia*), 480.
kebeæ (*Plusia*), 495.
kebeana (*Polychrisia*), 499.

laba (Cymosafia), 159.
laba (*Focilla*), 159.
labrosa (Phytometra), 530.
labrosa (*Plusia*), 530.
læna (Matigramma), 328.
lanigera (*Epicausis*), 337.
largera (*Phæocyma*), 242.
largera (Zale), 242.
laticlavia (*Plusia*), 486.
latifera (Grammodes), 333.
latipes (*Remigia*), 73, 84.
laurena (*Cœnipeta*), 178.
laureum (*Plusia*), 492.
lavendula (Phytometra), 454.
lavendula (*Plusia*), 454.
laxa (Mocis), 103.
laxa (*Phurys*), 103.
lectula (Phytometra), 480.
lectula (*Prodenia*), 480.
lenzii (*Plusia*), 552.
leonina (Phytometra), 575.
leonina (*Plusia*), 575.
Leucanitis, 279.
leucomelana (*Panthea*), 367.
Leucomelas, 44.
leucopis (Safia), 182.
leucoplaga (*Campometra*), 187.
leucoplaga (Safia), 187.
leucoptera (Cortyta), 315.
leucoptera (*Hypætra*), 315.
levina (Celiptera), 335.
levina (*Mocis*), 131, 134.

levina (Phalæna), 132.
lichenodes (Graphiphora), 400.
Lichnoptera, 388.
ligilla (*Alamis*), 303.
lima (Phurys), 110.
limata (Phytometra), 544.
limata (*Plusia*), 544.
limbirena (Phytometra), 472, 594.
limbirena (*Plusia*), 472.
limbosa (Euclidia), 333.
linearis (*Noctua*), 19.
lineata (*Pseudophia*), 270.
lineolaris (*Noctua*), 125.
lineolaris (Nymbis), 125.
lineosa (*Homoptera*), 236.
Litomitus, 130.
Litosea, 65.
litterata (*Phalæna*), 46.
litterata (Plusia), 594.
livaria (*Diphtera*), 391.
livida (*Drasteria*), 49.
livida (Phytometra), 457.
livida (*Plusiotricha*), 457.
loccuples (*Plusia*), 515.
longicornis (Phytometra), 488.
longicornis (*Plusia*), 488.
longiplaga (Parachalciope), 37.
lucasi (Chalciope), 31.
lucasii (*Trigonodes*), 31.
lucilia (Safia), 335.
lucimargo (Homoptera), 334.
ludifica (Moma), 380.
ludifica (*Noctua*), 380.
lumina (*Noctua*), 554.
lunata (*Noctua*), 223, 475.
lunata (*Phalæna*), 215.
lunata (Phytometra), 475.
lunata (Zale), 223.
lunifera (*Phæocyma*), 236, 246.
lunifera (Zale), 236.
lunulifera (Ophisma), 334.
luteifascia (Trisuloides), 340.
lutescens (Elæodes), 359.
lutescens (*Noctua*), 359.
lutosa (Chalciope), 333.
lycopodia (*Chalciope*), 87.
lydia (Homoptera), 334.
maccvoodi (Ulotrichopus), 330.
macrogamma (Phytometra), 531.
macrogamma (*Plusia*), 531.
macrosema (Tolna), 331.
macrostidsa (Hypætra), 58.
magalhaensi (*Euclidia*), 67.
magnifica (*Drasteria*), 131.
mahura (*Chalciope*), 39.
mahura (Parachalciope), 39.
mandarina (*Noctua*), 532.
mandarina (Phytometra), 532.
mandarina (*Sypna*), 250.
mandarina (Sypnoides), 250.
mapongua (*Plusia*), 525.
mappa (Phytometra), 533.
mappa (*Plusia*), 533.
marcida (Mocis), 82.
marcida (*Remigia*), 82.
marginalis (*Homoptera*), 221, 223.
maria (Phytometra), 562.
maria (*Plusia*), 562.
marmorifera (*Diphtera*), 396.
marmorifera (Lichnoptera), 396.
masaica (Cerocala), 278.
mascara (*Campometra*), 198.
mascara (Safia), 198.
masoni (Phytometra), 573.
masoni (*Plusia*), 573.
Matigramma, 326.
maxima (*Trigonodes*), 30.
mayeri (*Ophiusa*), 91.
megaloba (Phytometra), 518.
megaloba (*Plusia*), 518.
megas (Mocis), 79.
megas (*Remigia*), 79.
Megistoclisma, 55.
melanocephala (Plusia), 594.
melanotica (*Demas*), 361.
melicerta (Achæa), 332.
Melipotis, 332.
melliflua (*Caradrina*), 142.
melliflua (Plecopterodes), 142.
mendax (*Alamis*), 305.
mendax (Pericyma), 305.
mensuralis (*Remigia*), 86.
mensurata (Phurys), 335.
meretricia (*Campometra*), 181.
meretricia (Phytometra), 487.
meretricia (*Plusia*), 487.
meretricia (Safia), 181.
meroleuca (Safia), 202.
metabractea (*Plusia*), 553.
metaleuca (Attatha), 11.
metaleuca (Matigramma), 329.
metaleuca (Pericyma), 308.
metallica (Phytometra), 552.
metallica (*Plusia*), 552.
metata (*Phæocyma*), 239.
metata (Zale), 239.
metaxantha (*Chalciope*), 314.
metaxantha (Cortyta), 314.
metopis (Safia), 179.
mi (Euclidimera), 46.
mi (*Phalæna*), 46.
micadina (Chrysoptera), 441.
microgamma (*Noctua*), 415.
microgamma (Syngrapha), 415.
microgonia (*Chalciope*), 25.
microgonia (Grammodes), 25.
micropis (Hypogrammodes), 257.
microstigma (Phytometra), 477.
microstigma (*Plusia*), 477.
mikadina (*Plusia*), 441.
minax (*Coxina*), 207.
minax (Safia), 207.
minerea (*Homoptera*), 234.
minerea (Zale), 234.
minna (Ophisma), 334.
minor (*Safia*), 190.
minta (Safia), 190.

mirifica (Anydrophila), 266.
mirifica (*Euclidia*), 266.
Mocis, 76.
moderata (*Grammodes*), 144.
moderata (Plecopterodes), 144.
modesta (*Noctua*), 564.
modesta (Plusia), 594.
modesta (Phytometra), 564.
Mœpa, 297.
mœsta (Lichnoptera), 399.
mœstoides (Lichnoptera), 398.
mollis (Safia), 189.
mollis (*Yrias*), 189.
molybdopasta (Plecopterodes), 145.
molybdopasta (*Remigia*), 145.
Moma, 376.
Mominæ, 328.
monaxa (Nymbis), 129.
monaxa (*Phurys*), 129.
moneta (Chrysoptera), 444.
moneta (*Noctua*), 444.
mongolica (*Plusia*), 563.
monodon (*Plusia*), 541.
monogramma (*Plusia*), 535.
monoplaneta (Parachalciope), 39.
montana (*Celiptera*), 118.
montana (Nymbis), 118.
morigera (Chrysoptera), 445.
morigera (*Deva*), 445.
morio (Agonista), 333.
mortuorum (*Plusia*), 423.
moses (*Hypoglaucitis*), 288.
moupinensis (*Aplectoides*), 351.
Mouralia, 591.
moxa (Nymbis), 127.
moxa (*Phurys*), 127.
multilinea (*Remigia*), 116.
munda (Cerocala), 273.
munda (Mocis), 81.
munda (*Remigia*), 81.
mundicolor (*Grammodes*), 9.
mundula (*Drasteria*), 71.
munita (Gonospileia), 54.
munita (*Noctua*), 54.
mus (Calocasia), 364.
mus (*Diloba*), 364.
mutans (*Plusia*), 473.
mutuaria (Mocis), 96.
mutuaria (*Remigia*), 96.
mutuata (*Remigia*), 91.
mya (*Noctua*), 527.
mygdon (Euclidisema), 42.
mygdon (*Noctua*), 42.
mygdonias (*Chalciope*), 42.
mystica (Scodionyx), 285.
mysticus (*Scodionyx*), 285.

nabatæa (Clytie), 296.
nabatæa (*Pseudophia*), 296.
nadeja (*Plusia*), 578.
napelli (*Noctua*), 444.
narrata (*Poaphila*), 71.
navilla (Nymbis), 129.
navilla (*Phurys*), 129.
nebuligera (*Pseudophia*), 95.
Nephelina, 207.
ni, deserticola (*Plusia*), 469.
ni (*Noctua*), 468.
ni (Phytometra), 468.
nichollæ (Phytometra), 510.
nigra (*Tambana*), 353.
nigracreta (Charadra), 375.
nigrescens (*Barydia*), 201.
nigrescens (Moma), 382.
nigrescens (Safia), 201.
nigricans (*Homoptera*), 230.
nigriluna (Phytometra), 518.
nigriluna (*Plusia*), 518.
nigrimacula (*Ophiusa*), 96.
nigrisigna (Phytometra), 536.
nigrisigna (*Plusia*), 536.
nigrisigna (*Remigia*), 95.
ningi (Ophisma), 334.
nitens (Charadra), 372.
nitida (*Aplectoides*), 351.
nitida (Matigramma), 326.
nitida (*Moma*), 352.
nitida (Trisuloides), 351.
niviplaga (Homoptera), 334.
noctar (Safia), 206.
noctar (*Yrias*), 206.
Noctuidæ, 1.
Noctuinæ, 334, 335.
noctuoides (Hypætra), 64.
norda (*Phæocyma*), 234.
notata (*Noctua*), 9.
notescens (*Mocis*), 126.
novaguineana (Hypætra 62.
novenaria (Thyas), 335.
novita (Noctua), 334.
nu (*Plusia*), 410.
nu (Rachiplusia), 410.
nubila (*Abrostola*), 496.
numeria (*Peosina*), 255.
nyctichroa (Safia), 206.
Nymbis, 115.

obligata (*Phurys*), 123.
obliqua (*Homoptera*), 242.
obliqua (Zale), 242.
obscura (*Aplectoides*), 354.
obscura (*Campometra*), 191.
obscura (*Plusia*), 532.
obscura (Safia), 191.
obscura (Trisuloides), 354.
obscurata (*Anisoneura*), 263.
obsita (Homoptera), 334.
obsolefacta (Safia), 167.
obsolefactor (*Campometra*), 167.
obsolescens (Moma), 377.
obsoleta (Argyrostrotis), 156.
obsoleta (Gnamptonyx), 287.
obsoleta (*Poaphila*), 156.
obstans (Cuneisigna), 32.
obstans (*Trigonodes*), 32.
obtusisigna (Phytometra), 479.
obtusisigna (*Plusia*), 479.
obversa (*Poaphila*), 110.
ocellata (Grammodes), 15.
ochrea (*Drasteria*), 73.
ochreata (Phytometra), 557.
ochreata (*Plusia*), 557.
ochroargyra (*Euplexia*), 357.
octoscripta (*Plusia*), 425.

octoscripta (Syngrapha), 425.
octosignata (*Plusia*), 425.
oculata (*Grammodes*), 15.
oculicola (Grammodes), 15.
ogovana (*Plusia*), 473.
olearos (Safia), 181.
omega (*Argyrogramma*), 465.
omicron (*Autographa*), 465.
Omopterus, 207.
Omorphina, 403.
onerata (*Cropia*), 59.
oo (*Noctua*), 465.
oo (*Phalæna*), 522.
oo (Phytometra), 522.
Ophisma, 334.
oppia (Cerocala), 272.
oppia (*Pseudophia*), 272.
optabilis (*Phurys*), 121.
opulenta (Ophisma), 334.
orbifer (Phytometra), 550.
orbifer (*Plusia*), 550.
orbimaculata (*Diloba*), 593.
orichalcea (*Noctua*), 576, 580.
orichalcea (Phytometra), 580.
orientalis (Cerocala), 277.
ornata (Phytometra), 528.
ornata (*Plusia*), 528.
ornatissima (Phytometra), 515.
ornatissima (*Plusia*), 515.
orontes (Agnomonia), 333.
orophila (*Plusia*), 416.
orophila (Syngrapha), 416.
ottolengui (*Autographa*), 426.
ou (Phytometra), 542.
ou (*Plusia*), 542.
ovalis (Abrostola), 584.
ovalis (Phurys), 111.
oxygramma (*Autographa*), 494.
oxygramma (Phytometra), 494.
oxygramma (*Plusia*), 496.

pacalis (Argyrostrotis), 153.
pacalis (*Poaphila*), 153.
pachystrigata (Zale), 214.
pacifica (*Homoptera*), 178.
pacifica (Safia), 178.
Palæoplusia, 581.
palæstinensis (Grammodes), 25.
palæstinensis(*Leucanitis*), 25.
palata (*Charadra*), 370.
palata (Diphthera), 370.
pallida (*Autographa*), 425.
pallida (Cymosafia), 158.
pallidior (*Mocis*), 132.
pallidipennis (*Tambana*), 353.
pallidipennis (Trisuloides), 353.
palligera (*Deva*), 449.
palligera (Pseudeva), 449.
Panchrysia, 452.
pannosa (Phytometra), 519.
pannosa (*Plusia*), 519.
pannosa (*Sypna*), 250.
pannosa (Sypnoides), 250.
Panthea, 365.
papuana (Anisoneura), 262.
papuensis (Trisuloides), 340.
parabractea (Phytometra), 551.
Parachalciope, 35.
paraguayica (Mocis), 90.
parallela (*Plusia*), 494.
parallelaris (*Noctua*), 19.
Parallelia, 334.
parilis (Autographa), 404.
parilis (*Noctua*), 404.
pascuala (*Placonia*), 166.
pascuala (Safia), 166.
pasiphæa (Phytometra), 546.
pasiphœia (*Plusia*), 546.
pata (Charadra), 371.
pata (*Trisulodes*), 371.
patabilis (*Poaphila*), 71.
patefacta (*Plusia*), 432.
paulina (*Plusia*), 561.
pavona (*Drasteria*), 103.
pectinata (*Remigia*), 75.
pedalis (*Plusia*), 412.
pedalis (Rachiplusia), 412.
Pelamia, 76.
pellita (*Remigia*), 91.
penna (*Homoptera*), 236.
penna (Zale), 236.
peponis (*Noctua*), 573.
peponis (Phytometra), 573.
percontationis (*Plusia*), 535.
percontatrix (*Plusia*), 534.
perfinita (Ophisma), 334.
Pericyma, 297.
perigeana (Matigramma), 329.
perlata (*Phurys*), 82.
permissa (Phytometra), 497.
permissa (*Plusia*), 497.
permixta (Safia), 183.
perplexa (*Poaphila*), 112.
persinuosa (Mocis), 98.
persinuosa (*Remigia*), 98.
perspicua(*Poaphila*), 112.
persubtilis (*Remigia*), 83.
pertusa (*Mocis*), 132.
pertusa (*Plusia*), 522.
peruncta (*Homoptera*), 209.
phæochroa (Safia), 172.
phæocyma (Cortyta), 321.
phæograpta (Zale), 225.
phæoleuca (Homoptera), 334.
phasianoides (Mocis), 76.
phasianoides (*Pelamia*), 76.
phocea (Phytometra), 458.
phocea (*Plusia*), 458.
phocina (Phytometra), 493.
Phœocyma, 207.
Phurys, 105.
Phytometra, 452.
Phytometrinæ, 401.
picta (Leucanitis), 282.
picturata (Safia), 203.
placata (*Poaphila*), 155.
placida (Phytometra), 460.
placida (*Plusia*), 460.
placida (Safia), 335.
Placonia, 165.
plagiata (Poaphila), 335.
Platycerura, 365.
Plecopterodes, 141.
plenipennis (*Homoptera*), 229.
plumbea (*Plataplecta*), 345.
plumbea (Trisuloides), 345.

plumipes (*Homoptera*), 301.
Plusia, 452.
Plusidia, 450.
Plusiopalpa, 437.
Plusiotricha, 452.
Poaphila, 151.
Polychrysia, 439.
polycyma (Cortyta), 320.
polycyma (*Hypoglaucitis*), 320.
polygramma (Pericyma), 311.
polyphænaria (*Trisuloides*), 346.
portlandia (Diphthera), 369.
portlandia (*Panthea*), 369.
posterior (*Homoptera*), 217.
postistrigaria (Entomogramma), 333.
præusta (Safia), 335.
precationis (Phytometra), 524.
precationis (*Plusia*), 524.
primulina (Lichnoptera), 395.
pritanis (Phalæna), 334.
privata (*Homoptera*), 213.
problematica (*Trigonodes*), 31.
procumbens (Homoptera), 334.
Prodotis, 13.
profesta (Cortyta), 323.
profesta (*Pericyma*), 323.
prolixa (Nymbis), 122.
prolixa (*Phurys*), 122.
promptella (*Tinea*), 115.
propinquilinea (Calocasia), 363.
propinquilinea (*Charadra*), 363.
propugnata (Mocis), 102.
propugnata (*Remigia*), 102.
protea (*Noctua*), 535.
psectrocera (Phytometra), 453.
Pseudanthracia, 207.
Pseudathyrma, 58.
Pseudeva, 447.
pseudochalcytes (Phytometra), 523.
pseudogamma (Phytometra), 539.
pseudogamma (*Plusia*), 539.
Pseudophia, 239.
Pterochæta, 58.
pterylota (Phytometra), 452.
pterylota (*Plusia*), 452.
pulcherrima (Grammodes), 16.
pulchra (Plecopterodes), 145.
pulchrina (*Noctua*), 534.
pulchrina (Phytometra), 534.
pulcra (*Noctua*), 145.
pulverilinea (Matigramma), 327.
punctularis (*Noctua*), 84.
purgata (*Cænurgia*), 67, 69, 108.
purissima (Phytometra), 548.
purissima (*Plusia*), 548.
purpureofusa (Phytometra), 543.
purpureofusa (*Plusia*), 543.
purpurigera (*Deva*), 448.
purpurigera (Pseudeva), 448.
pusilla (Chalciope), 29.
pusilla (*Grammodes*), 29.
putnami (Phytometra), 509.
putnami (*Plusia*), 509.
putrescens (*Erebus*), 223.
pygaria (Trisuloides), 339.
pyrenaica (Syngrapha), 428.
pyropia (Phytometra), 517.
pyropia (*Plusia*), 517.
pythion (*Panthea*), 394.

quadrifilaris (*Agnonia*), 156.
quadrifilaris (Argyrostrotis), 156.
quadriplaga (*Latebraria*), 161.
quadriplaga (*Plusia*), 404.
quæsita (Grammodes), 21.
quæstionis (*Noctua*), 484.
quæstionis (*Plusia*), 465.

Rachiplusia, 410.
rada (*Microphisa*), 283.
radapicta (*Leucanitis*), 282.
ramifera (Mocis), 100.
Ramphia, 161.
rectangula (*Plusia*), 423.
rectangula (Syngrapha), 423.
rectivia (Parallelia), 332.
reducens (Agonista), 330.
refracta (*Mocis*), 109.
regalis (Attatha), 8.
regalis (*Hypercompa*), 8.
regia (*Euclidia*), 49.
regia (Euclidimera), 49.
remanens (*Remigia*), 79.
Remigia, 76.
remigiana (Cortyta), 312.
remigina (*Euclidia*), 75.
remigina (Remigiodes), 75.
Remigiodes, 74.
remigioides (Celiptera), 131.
remigioides (*Ophiodes*), 131.
renardi (Phytometra), 568.
renardi (*Plusia*), 567, 568.
renifera (Gaujonia), 387.
repanda (Mocis), 84.
repanda (*Noctua*), 84.
reticulata (*Plusia*), 475.
retrahens (Homoptera), 334.
revoluta (Poaphila), 335.
revulsa (*Bolina*), 278.
rhigodora (Zale), 225.
rhodochrysa (*Plusia*), 467.
rhopalosema (Phytometra), 513.
rhotana (*Colocasia*), 375.
Rhubina, 165.
ribbei (Megistoclisma), 56.
ribbei (*Nyctipao*), 56.
rivulata (*Chalciope*), 34.
rivulata (Cuneisigna), 34.
roda (*Euclidia*), 283.
roda (Leucanitis), 283.
rogationis (*Plusia*), 522.
rosacea (Cortyta), 320.
rosacea (*Pericyma*), 320.
rosacea (*Spirama*), 331.
rosæ (*Homoptera*), 222.
roxana (*Plusia*), 437.
rubi (*Homoptera*), 244.
rubi (Zale), 244.
rubiata (*Phœocyma*), 243.
rubiata (Zale), 243.

rubida (Phytometra), 491.
rubidus (*Autographa*), 491.
rubigera (Pseudeva), 449.
rubrosuffusa (Matigramma), 327.
rufescens (Anua), 331.
ruficolora (Cortyta), 324.
ruficolora (*Homoptera*), 324.
rufipicta (*Campometra*), 166.
rufipicta (Safia), 166.
rufitincta (Lichnoptera), 393.
rufosa (Zale), 221.
ruinosa (*Hypætra*), 59.
runica (Cænurgia), 67.
runica (*Euclidia*), 67.
russea (*Plusia*), 539.
rutila (*Plusia*), 465.
rutilifrons (Phytometra), 517.
rutilifrons (*Plusia*), 517.

sabena (*Homoptera*), 219.
sabena (Zale), 219.
sabouraudi (Anydrophila), 267.
sabouraudi (*Palpangula*), 267.
sacceni (Syngrapha), 417.
sackenii (*Plusia*), 417.
sacra (*Pericyma*), 323.
Safia, 165, 335.
Safidia, 163.
sagata (Bathyra), 383.
sagata (*Diphtera*), 383.
salebrosa (Anisoneura), 263.
salicis (*Homoptera*), 222.
salicis (Zale), 222.
salmus (Ophiusa), 334.
sana (Cerocala), 271.
sancta (Clytie), 291.
sancta (*Pseudophia*), 291.
sansoni (*Autographa*), 546.
sansoni (Phytometra), 546.
saundersii (*Homoptera*), 223.
scandulata (*Homoptera*), 310.
scandulata (Pericyma), 310.
scapularis (*Plusia*), 552.
scapulosa (Cerocala), 270, 273.
scapulosa (*Noctua*), 273.
schalisema (Phytometra), 537.
schlumbergeri (*Leucanitis*), 284.
scintillans (*Plusia*), 578.
Scodionyx, 285.
scotorrhiza (Clytie), 290.
scotorrhiza (*Pseudophia*), 290.
secundaria (*Plusia*), 489.
securis (*Noctua*), 551.
selecta (*Plusia*), 421.
selecta (Syngrapha), 421.
selene (Placonia), 335.
semiargentea (*Plusia*), 571.
semicuprea (Calyptis), 139.
semicuprea (*Plusia*), 139.
semivitta (Phytometra), 548.
semivitta (*Plusia*), 548.
separabilis (*Homoptera*), 171.
separabilis (Safia), 171.
separata (*Diloba*), 593.
sequistriaris (*Agnomonia*), 156.
serena (*Plusia*), 545.
sergia (*Plusia*), 563.
serica (Trisuloides), 342.
sesquistria (Leucanitis), 280.
sestertia (Phytometra), 525.
sestertia (*Plusia*), 525.
setipes (*Xylis*), 209.
setipes (Zale), 209.
sevastina (*Noctua*), 531.
sexplagiata (*Homoptera*), 221.
sexplagiata (Zale), 121.
sica (Chrysoptera), 440.
sica (*Plusia*), 440.
siculifera (*Plusia*), 467.
siderifera (Phytometra), 565.
siderifera (*Plusia*), 565.
signata (*Noctua*), 491.
signata (Phytometra), 491.
signata (*Triphæna*), 406.
significans (*Plusia*), 468.
simiola (Anydrophila), 265.
simiola (*Palpangula*), 265.
simplex (*Plusia*), 419.
simplicior (*Homoptera*), 167, 168.
simplicior (Safia), 167.
simplicissima (*Autographa*), 420.
simplicissima (Syngrapha), 420.
smithi (Epicausis), 337.
smithii (*Daphnœura*), 338.
snovi (Syngrapha), 418.
snowii (*Plusia*), 418.
sobria (*Microphysa*), 73.
sobria (Remigia), 335.
socors (*Cænurgia*), 67.
socotrensis (Cerocala), 276.
sokotrensis (*Cerocala*), 276.
solida (*Autographa*), 511.
solita (*Homoptera*), 303.
spadaria (Doryodes), 115.
speciosa (*Autographa*), 420.
speciosa (Syngrapha), 420.
sphingoides (*Anisoneura*), 262.
spissa (*Diptherа*), 396.
spissa (Lichnoptera), 396.
splendida (Chrysoptera), 443.
splendida (*Deva*), 443.
spoliata (*Plusia*), 475.
squalens (Pericyma), 308.
squamularis (*Noctua*), 241.
squamularis (Zale), 241.
stigmata (Hypætra), 60.
stolida (Grammodes), 21.
stolida (*Noctua*), 21.
striatella (*Plusia*), 582.
strigimacula (*Homoptera*), 216.
strigulataria (*Erastria*), 157.
stupida (*Euclidia*), 22.
stylobata (*Homoptera*), 188.
subænescens (*Ophiusa*), 91.
subchalybæa (*Abrostola*), 496.
subchalybæa (Phytometra), 496.
subflava (Trisuloides), 348.
sublimis (*Cænipeta*), 177.
sublimis (Safia), 177.

sublucida (*Hypogramma*), 254.
sublunaris (Clytie), 295.
sublunaris (*Pseudophia*), 295.
subocellata (*Cœnipeta*), 258.
subocellata (Hypogrammodes), 258.
subrosea (*Homoptera*), 169.
subrosea (Safia), 169.
subsidens (Phytometra), 470.
subsidens (*Plusia*), 470.
subtilis (*Remigia*), 84.
subvaria (*Cœnipeta*), 200.
subvaria (Safia), 200.
sudena (Charadra), 375.
surena (*Plusia*), 430.
surena (Syngrapha), 430.
surrufula (Argyrostrotis), 152.
surrufula (*Celiptera*), 152.
swinhoei (Ophiusa), 324.
sylvarum (Argyrostrotis), 154.
sylvarum (*Poaphila*), 154.
synethes (Plecopterodes), 143.
Syngrapha, 412.
Sypnoides, 248.
syrdaja (Clytie), 293.
syrdaja (*Pseudophia*), 293.
syriaca (Clytie), 294.
syriaca (*Ophiusa*), 294.

Tambana, 339.
tancrei (Phytometra), 556.
tancrei (*Plusia*), 556.
tarara (*Mamestra*), 358.
tarassota (Phytometra), 473.
tarsalis (Fuclidia), 333.
tehuelcha (*Euclidia*), 67.
Telesilla, 452.
teligera (Nymbis), 119.
teligera (*Phurys*), 119.
temperata (Plusia), 594.
tephrina (*Euclidia*), 108.
teretilinea (Phurys), 335.
termina (Pheocyma), 335.
terrena (Homoptera), 334.
terrosa (*Homoptera*), 217.
terrosa (Zale), 217.
terrulenta (Clytie), 297.
terrulenta (*Pseudophia*), 297.
tetragona (Phytometra), 549.
tetragona (*Plusia*), 549.
tetraspila (*Capnodes*), 145.
tetrastigma (Phytometra), 559.
tetrastigma (*Plusia*), 559.
texana (Focillidia), 148.
texana (Mocis), 83.
texana (*Remigia*), 83.
textilis (*Nymbis*), 121.
Themma, 113.
thericles (Celiptera), 135.
thericles (*Thermesia*), 135.
thermochroa (Safia), 197.
thyatyroides (Eosphoropteryx), 446.
thyatyroides (*Plusia*), 446.
tibetana (*Plusia*), 408.
tinctoides (*Abrostola*), 592.
tinctoides (Mouralia), 592.
togataria (*Anaitis*), 69.
togataria (Cœnurgia), 69.
Tolnaodes, 252.
torpida (*Remigia*), 96.
trabea (*Deva*), 444.
trailii (*Homoptera*), 193.
transacta (*Syrnia*), 161.
transbaikalensis (*Plusia*), 431.
transfixa (*Abrostola*), 496, 557.
transfixa (Phytometra), 557.
translata (*Remigia*), 87.
triangulum (*Noctua*), 42.
Trichosea, 376.
trifasciata (*Catephia*), 93.
trifasciata (Mocis), 93.
trigoniferaa (*Hypætra*), 63.
Trigonodes, 26.
trigonometrica (Parachalciope), 38.
triloba (Speiredonia), 331.
triopis (Abrostola), 589.
triquetra (Gonospileia), 53.
triquetra (*Noctua*), 53.
tripartita (Abrostola), 585.
tripartita (*Noctua*), 585.
triplasia (Abrostola), 587.
triplasia (*Noctua*), 585, 587.
tristicula (*Euclidia*), 52.
Trisuloides, 339, 400.
Tunza, 113.
turbida (*Homoptera*), 300.
turbida (Pericyma), 300.
typinota (*Plusia*), 532.

u-aureum (*Plusia*), 424, 432.
u-aureum (Syngrapha), 424.
u-brevis (*Plusia*), 530.
umbrina (*Alamis*), 301.
umbrina (Pericyma), 301.
umbripennis (*Ypsia*), 230.
umbrosa (Calocasia), 361.
umbrosa (*Demas*), 361.
undata (Mocis), 91.
undata (*Noctua*), 91.
undifera (Mocis), 101.
undularis (*Noctua*), 230.
undularis (*Ypsia*) 231.
undularis (Zale), 230, 333.
uniformis (*Homoptera*), 246.
unilineata (*Homoptera*), 226.
unilineata (Zale), 226.
uralensis (Phytometra), 565.
uralensis (*Plusia*), 563, 565, 567.
uraliensis (*Plusia*), 565.
urentis (Abrostola), 585.
urticæ (*Noctua*), 585.
ustipennis (*Homoptera*), 209.
ustipennis (*Xylis*), 208.

vaccinii (*Plusia*), 424.
v-alba (*Autographa*), 429.
v-alba (Syngrapha), 429.
validula (*Hypogramma*), 303.
valina (Celiptera), 135.
valini (*Mocis*), 135.
vampyrus (Noctua), 330.
v-argenteum (*Noctua*), 527.
v-argenteum (Phytometra), 527.
variabilis (*Heliothis*), 144.

variabilis (*Noctua*), 563.
variabilis (Phytometra), 563.
variana (*Autographa*), 425.
variegata (*Carea*), 400.
variegata (Elydnodes), 400.
variegata (*Tambana*), 347.
variegata (Trisuloides), 347.
variolosa (*Ophiusa*), 132.
vau-nigrum (Gaujonia), 387.
v-aureum (*Plusia*), 534.
velata (*Ophisma*), 91.
venusta (Palæoplusia), 582.
venusta (*Plusia*), 582.
vermiculosa (Cerocala), 275.
vernifera (*Homoptera*), 213.
verruca (*Noctua*), 465.
verruca (Phytometra), 465.
verticillata (*Plusia*), 484.
vetusta (Cortyta), 318.
vetusta (*Polydesma*), 318.
vilis (Gnamptonyx), 286.
vilis (*Homoptera*), 286.
vinculum (Phurys), 105.
violascens (Phytometra), 476.
virbia (*Phalæna*), 91.
virescens (Elæodes), 357.
virescens (*Eremobia*), 357.
virginaria (*Biston*), 370.
virginaria (Diphthera), 370.
virgula (Caloplusia), 406.
virgula (*Plusia*), 406.
viridans Homoptera), 213, 215.
viridans (Zale), 215, 334.
viridis (*Plusia*), 564.
viridisigma (*Plusia*), 421.
viridisignata (*Plusia*), 421.
viridisquamata (*Homoptera*), 214, 215, 216.
vitiensis (Mocis), 89.
v-minus (Phytometra), 555.
v-minus (*Plusia*), 555.

weymeri (*Demas*), 361.
woodii (*Homoptera*), 246.

Xylis, 207.
xylomiges (Remigia), 335.

yavapai (*Phæocyma*), 244.
yavapai (Zale), 244.
yendola (*Alamis*), 307.
Ypsia, 207.

Zale, 207.
zeta (*Autographa*), 425.
zeuzeroides (Anisoneura), 262.
zosimi (*Noctua*), 578.
zosimi (Phytometra), 578.

PRINTED BY TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

B.M. (N.H.).
No. 21.

LIST OF THE CURRENT

NATURAL HISTORY PUBLICATIONS OF THE TRUSTEES OF THE BRITISH MUSEUM.

The following publications can be purchased through the Agency of *Messrs.* LONGMANS, GREEN & Co., 39, *Paternoster Row, London, E.C.*; *Mr.* QUARITCH, 11, *Grafton Street, New Bond Street, W.*; and *Messrs.* DULAU & Co., Ltd., 37, *Soho Square, W.*; or at the NATURAL HISTORY MUSEUM, *Cromwell Road, London, S.W.*

The History of the Collections contained in the Natural History Departments of the British Museum :—

Vol. I. Libraries; Botany; Geology; Minerals. Pp. xvii., 442. 1904, 8vo. 15*s.*

Vol. II. Separate historical accounts of the several collections included in the Department of Zoology. Pp. 782. 1906, 8vo. 1*l.* 10*s.*

Vol. II.—Appendix. General History of the Department of Zoology from 1856 to 1895. By Dr. Albert Günther, F.R.S., formerly Keeper of the Department of Zoology. Pp. ix., 109. [With Index.] 1912, 8vo. 5*s.*

Catalogue of the Books, Manuscripts, Maps, and Drawings in the British Museum (Natural History). Compiled by B. B. Woodward, Assistant in charge of the General Library, with some clerical assistance :—

Vol. I. A—D. Pp. viii., 500. 1903, 4to. 1*l.*
Vol. II. E—K. Pp. 501–1038. 1904, 4to. 1*l.*
Vol. III. L—O. Pp. 1039–1494. 1910, 4to. 1*l.*
Vol. IV. P—SN. Pp. 1495–1956. 1913, 4to. 1*l.*

Catalogue of the Specimens and Drawings of Mammals, Birds, Reptiles, and Fishes of Nepal and Tibet. Presented by B. H. Hodgson, Esq., to the British Museum. 2nd edition. By John Edward Gray. Pp. xii., 90. [With an account of the Collection by Mr. Hodgson.] 1863, 12mo. 2*s.* 3*d.*

(32203r—29.) Wt. 26524—41. 1500. 10/13. D & S. (*S.*) A

Report on the Zoological Collections made in the Indo-Pacific Ocean during the voyage of H.M.S. "Alert," 1881–2. Pp. xxv., 684. 54 Plates. 1884, 8vo. 1*l.* 10*s.*

Summary of the Voyage... ...	... By Dr. R. W. Coppinger.
Mammalia	... ,, O. Thomas.
Aves...	... ,, R. B. Sharpe.
Reptilia, Batrachia, Pisces	... ,, A. Günther.
Mollusca	... ,, E. A. Smith.
Echinodermata	... ,, F. J. Bell.
Crustacea	... ,, E. J. Miers.
Coleoptera	... ,, C. O. Waterhouse.
Lepidoptera	... ,, A. G. Butler.
Alcyonaria and Spongiida	... ,, S. O. Ridley.

Report on the Collections of Natural History made in the Antarctic Regions during the Voyage of the "Southern Cross." Pp. ix., 344. 53 Plates. 1902, Royal 8vo. 2*l.*

Mammalia	By Capt. G. E. H. Barrett-Hamilton.
Notes on Antarctic Seals ...	,, E. A. Wilson, M.B.
Extracts from the "Diary" of the late Nicolai Hanson.	——
Aves	,, Dr. R. Bowdler Sharpe.
Pisces...	,, G. A. Boulenger, F.R.S.
Tunicata	,, Prof. W. A. Herdman, F.R.S.
Mollusca	,, E. A. Smith.
Echinoderma	,, Prof. F. J. Bell.
Insecta	,, G. H. Carpenter and Hon. N. C. Rothschild.
Arachnida	,, Dr. E. L. Trouessart.
Crustacea	,, T. V. Hodgson.
Polychæta	,, Dr. A. Willey.
Gephyrea	,, A. E. Shipley.
Nematoda ... ... / Cestoda	,, Dr. von Linstow.
Polyzoa ... ... / Porifera	,, R. Kirkpatrick.
Anthozoa	,, Dr. L. Roule and S. J. Hickson, F.R.S.
Actiniæ	,, J. A. Clubb.
Hydrozoa	,, E. T. Browne.
Cryptogamia	,, A. Gepp, V. H. Blackman, and Miss E. S. Barton.
Rock Specimens	,, Dr. G. T. Prior.

National Antarctic Expedition, 1901–1904. [*Discovery Report.*] Natural History :—

Vol. I. Geology (Field-Geology : Petrography). Pp. xii., 160 : 10 plates, 72 text-figures, 2 maps. [With Index.] 1907, 4to. 1*l.* 10*s.*

Field-Geology	By H. T. Ferrar, M.A., F.G.S.
Rock-Specimens	,, G. T. Prior, M.A., D.Sc., F.G.S.

Vol. II. Zoology (Vertebrata : Mollusca : Crustacea). Pp. xiv., 355 : 33 plates (17 coloured), 146 text-figures, 1 map. 1907, 4to. 3*l.*

Mammalia (pp. 69 : 5 pls. [3 col.], 36 figs.) / Aves (pp. 121 : 13 pls. col., 46 figs.) ...	By E. A. Wilson, M.B.

National Antarctic Expedition, 1901–1904—*continued.*

Vol. II—*continued.*

Anatomy of Penguins (pp. 28 : 1 pl., 8 figs.)	By W. P. Pycraft.
Fishes (pp. 5 ; 2 pls.)	„ G. A. Boulenger, F.R.S.
Cephalodiscus (pp. 67 : 7 pls. [1 col.], 17 figs.)	„ W. G. Ridewood, D.Sc.
Mollusca. I.—Cephalopoda (pp. 2 : 1 fig.)	„ W. E Hoyle, D.Sc.
„ II.—Gastropoda (pp. 12, 1 : 2 pls.)	„ E. A. Smith, I.S.O.
„ III.—Amphineura	
„ IV.—Nudibranchiata (pp. 28 : 1 pl., 30 figs.)	„ Sir Charles Eliot, K.C.M.G., LL.D.
„ V.—Lamellibranchiata (pp. 7 : 1 pl.)	„ E. A. Smith, I.S.O.
Brachiopoda (pp. 2 : 4 figs.)	
Crustacea I.—Decapoda (pp. 7) ...	„ W. T. Calman, D.Sc.
„ II.—Cumacea (pp. 6 : 1 pl., 4 figs.)	

Vol. III. Zoology and Botany (Invertebrata : Marine Algæ, Musci). Pp. vi., 273 : 51 plates, 8 text-figures, and 1 chart. 1907, 4to. 2*l.* 10*s.*

On Collecting in Antarctic Seas (pp. 10)	By T. V. Hodgson, F.L.S.
Mollusca. VI.—Pteropoda (pp. 15 : 2 pls.)	„ Sir Charles Eliot, K.C.M.G., LL.D.
Crustacea. III.—Amphipoda (pp. 39 : 13 pls.)	„ A. O. Walker, F.L.S.
„ IV.—Leptostraca (pp. 2 : 2 figs.)	„ Dr. J. Thiele.
„ V.—Ostracoda (pp. 9 : 3 pls.)	„ Prof. G. S. Brady, F.R.S.
„ VI.—Cirripedia (pp. 4 : 1 pl.)	„ Prof. A. Gruvel.
Pycnogonida (pp. 72 : 10 pls.)	„ T. V. Hodgson, F.L.S.
Acari (pp. 6 : 1 pl.)	„ Dr. E. L. Trouessart.
Chætognatha (pp. 6 : 1 chart)	„ Dr. G. H. Fowler, F.L.S.
Nematoda (pp. 4 : 1 pl.)	„ Dr. O. von Linstow.
Cestoda (pp. 6 : 1 pl.)	„ A. E. Shipley, F.R.S.
Coelentera. I.—Alcyonaria (pp. 15 : 2 pls.)	„ Prof. S. J. Hickson, F.R.S.
„ II.—Hydroid Zoophytes (pp. 34 : 4 pls.)	„ Prof. S. J. Hickson, F.R.S., and F. H. Gravely.
„ III.—Tentacles of a Siphonophore (pp. 3 : 5 figs.)	„ Dr. J. Rennie.
Porifera. I.—Hexactinellida (pp. 25 : 7 pls.)	„ R. Kirkpatrick.
Marine Algæ. I.—Phæophyceæ and Florideæ (pp. 15 : 4 pls.)	„ A. Gepp and Mrs. E. S. Gepp.
„ „ II.—Corallinaceæ (pp. 2 : 1 fig.)	„ M. Foslie.
Musci (pp. 6 : 2 pls.)	„ J. Cardot.

Vol. IV. Zoology (various Invertebrata). Pp. iv., 281 : 65 plates, 1 text-figure. 1908, 4to. 1*l.* 15*s.*

Mollusca. VII.—Solenogastres (pp. 13 : 2 pls.)	By Dr. H. F. Nierstrasz.

National Antarctic Expedition, 1901–1904—*continued.*

Vol. IV—*continued.*

Insecta.—Aptera (pp. 5 : 1 pl.) ...	By	G. H. Carpenter, B.Sc., M.R.I.A.
Crustacea. VII.—Schizopoda (pp. 42 : 8 pls.)	„	W. M. Tattersall, M.Sc.
„ VIII.—Copepoda (pp. 44 : 7 pls.)	„	R. Norris Wolfenden, M.D.
Echinoderma (pp. 16 : 5 pls.)	By	F. Jeffrey Bell, M.A.
Echinoderm Larvæ (pp. 9 : 1 pl.) ...	„	E. W. McBride, M.A., F.R.S., and J. C. Simpson, B.Sc.
Myzostomidæ (pp. 26 : 1 pl. and 1 figure)	„	Dr. Rudolf Ritter von Stummer-Traunfels.
Sipunculoidea (pp. 6)	„	W. F. Lanchester, M.A.
Coelentera. IV.—Actiniæ (pp. 12 : 3 pls.)	„	J. A. Clubb, M.Sc.
Porifera. II.—Tetraxonida (pp. 56 : 19 pls.)	„	R. Kirkpatrick.
„ III.—Calcarea (pp. 52 : 12 pls.)	„	C. F. Jenkin, B.A.

Vol. V. Zoology and Botany. Pp. ix., 212 : 28 plates, and 19 text-figures. [With a Summary of the Contents of Vols. II.–V.] 1910, 4to. 1*l.* 10*s.*

Vertebrata. IA.—Mammalia (Seal-Embryos) (pp. 21 : 2 pls., 1 text-figure)	By	Dr. H. W. Marett Tims.
Tunicata (pp. 26 : 7 pls., 2 text-figures)	„	Prof. W. A. Herdman, D.Sc., F.R.S.
Crustacea. IX.—Isopoda (pp. 77 : 10 pls)	„	T. V. Hodgson, F.L.S.
Nemertinea (pp. 15 : 1 pl., 16 text-figures)	„	Prof. L. Joubin.
Cœlentera. V.—Medusæ (pp. 62 : 7 pls.)	„	Edward T. Browne.
Lichenes (pp. 11 : 1 pl.)...	„	Dr. O. V. Darbishire.

Vol. VI. Zoology and Botany. Pp. xvi., 101 : 8 plates, 1 key-plate, and 1 text-figure. [With Synopsis of Contents of the several volumes of Memoirs, Classified Summary of the Contents of Vols. I.–VI., Subject Index, and Index of Authors.] 1912, 4to. 16*s.*

Echinoderma. III.—On a collection of young Holothurioids (pp. 9 : 2 pls., and key to pl. 1.)	By	Prof. E. W. MacBride, D.Sc., LL.D., F.R.S.
Polychæta (pp. 32 : 3 pls.)	„	Prof. E. Ehlers.
Freshwater Algæ (pp. 60 : 3 pls., 1 text-figure)	„	Dr. F. E. Fritsch, F.L.S.

A Monograph of Christmas Island (Indian Ocean) : Physical Features and Geology by C. W. Andrews, B.A., B.Sc., F.G.S., with descriptions of the Fauna and Flora by numerous contributors. Pp. xv., 337 : 22 plates (7 coloured), a map, and 27 illustrations in text. [With Index.] 1900, 8vo. 1*l.*

First Report on Economic Zoology. By Fred. V. Theobald M.A., &c. [With an Introduction, containing a Classification of Animals from the point of view of Economic Zoology, by Prof. E. Ray Lankester, LL.D., F.R.S.] Pp. xxxiv., 192. 18 Woodcuts. 1903, Roy. 8vo. 6*s.*

Second Report on Economic Zoology. By Fred. V. Theobald, M.A., &c. Pp. x., 197. 29 Illustrations. 1904, Roy. 8vo. 6*s.*

MAMMALS.

Catalogue of the Bones of Mammalia in the Collection of the British Museum. By Edward Gerrard. Pp. iv., 296, 1862, 8vo. 5*s.*

Catalogue of Monkeys, Lemurs, and Fruit-eating Bats in the Collection of the British Museum. By Dr. J. E. Gray, F.R.S., &c. Pp. viii., 137. 21 Woodcuts. 1870, 8vo. 4*s.*

Catalogue of the Chiroptera in the Collection of the British Museum. Second Edition. By Knud Andersen. Vol. I. Megachiroptera. Pp. ci., 854: 85 text-figures. [With Table of Contents, Introduction, and Index.] 1912, 8vo. 2*l.* 10*s.*

Catalogue of Carnivorous Pachydermatous, and Edentate Mammalia in the British Museum. By John Edward Gray, F.R.S., &c. Pp. vii., 398. 47 Woodcuts. 1869, 8vo. 6*s.* 6*d.*

Catalogue of Seals and Whales in the British Museum. By John Edward Gray, F.R.S., &c. 2nd Edition. Pp. vii., 402. 101 Woodcuts. 1866, 8vo. 8*s.*

———Supplement. By John Edward Gray, F.R.S., &c. Pp. vi., 103. 11 Woodcuts. 1871, 8vo. 2*s.* 6*d.*

Catalogue of Ruminant Mammalia (*Pecora*, Linnæus) in the British Museum. By John Edward Gray, F.R.S., &c. Pp. viii., 102. 4 Plates. 1872, 8vo. 3*s.* 6*d.*

Catalogue of the Ungulate Mammals in the British Museum (Natural History). Vol. I. Artiodactyla, Family Bovidæ, Subfamilies Bovinæ to Ovibovinæ (Cattle, Sheep, Goats, Chamois, Serows, Takin, Musk-Oxen, etc.). By R. Lydekker, F.R.S. Pp. xvii., 249 : 55 text-figures. [With List of Illustrations and Index of Genera and Species.] 1913, 8vo. 7*s.* 6*d.*

Monograph of the Okapi. By Sir E. Ray Lankester, K.C.B., M.A., D.Sc., F.R.S., &c. Atlas. Compiled with the assistance of W. G. Ridewood, D.Sc. 48 Plates, with xxii. pp. of Explanations, &c. 1910, 4to. 1*l.* 5*s.*

Catalogue of the Marsupialia and Monotremata in the Collection of the British Museum. By Oldfield Thomas. Pp. xiii., 401. 4 Coloured and 24 plain Plates. [With Systematic and Alphabetical Indexes.] 1888, 8vo. 1*l.* 8*s.*

Catalogue of the Mammals of Western Europe (Europe exclusive of Russia) in the Collection of the British Museum. By Gerrit S. Miller. Pp. xv., 1019. 213 Text-figures. [With Systematic and Alphabetical Indexes.] 1912, 8vo. 1*l.* 6*s.*

Catalogue of the Heads and Horns of Indian Big Game bequeathed by A. O. Hume, C.B., to the British Museum (Natural History). By R. Lydekker, F.R.S. Pp. xvi., 45. 16 Text-figures, and a Portrait of Mr. Hume. [With an Alphabetical Index.] 1913, 8vo. 2*s*.

BIRDS.

Catalogue of the Birds in the British Museum :—

Vol. VII. Catalogue of the Passeriformes, or Perching Birds. *Cichlomorphæ* : Part IV., containing the concluding portion of the family Timeliidæ (Babbling Thrushes). By R. Bowdler Sharpe. Pp. xvi., 698. Woodcuts and 15 coloured Plates. [With Systematic and Alphabetical Indexes.] 1883, 8vo. 1*l*. 6*s*.

Vol. VIII. Catalogue of the Passeriformes. or Perching Birds. *Cichlomorphæ* : Part V., containing the families Paridæ and Laniidæ (Titmice and Shrikes) ; and *Certhiomorphæ* (Creepers and Nuthatches). By Hans Gadow, M.A., Ph.D. Pp. xiii., 386. Woodcuts and 9 coloured Plates. [With Systematic and Alphabetical Indexes.] 1883, 8vo. 17*s*.

Vol. X. Catalogue of the Passeriformes, or Perching Birds. *Fringilliformes* : Part I., containing the families Dicæidæ, Hirundinidæ, Ampelidæ, Mniotiltidæ, and Motacillidæ. By R. Bowdler Sharpe. Pp. xiii., 682. Woodcuts and 12 coloured Plates. [With Systematic and Alphabetical Indexes.] 1885, 8vo. 1*l*. 2*s*.

Vol. XI. Catalogue of the Passeriformes, or Perching Birds. *Fringilliformes* : Part II., containing the families Cœrebidæ, Tanagridæ, and Icteridæ. By Philip Lutley Sclater, M.A., F.R.S. Pp. xvii., 431. Woodcuts and 18 coloured Plates. [With Systematic and Alphabetical Indexes.] 1886, 8vo. 1*l*.

Vol. XII. Catalogue of the Passeriformes, or Perching Birds. *Fringilliformes* : Part III., containing the family Fringillidæ. By R. Bowdler Sharpe. Pp. xv., 871. Woodcuts and 16 coloured Plates. [With Systematic and Alphabetical Indexes.] 1888, 8vo. 1*l*. 8*s*.

Vol. XIII. Catalogue of the Passeriformes, or Perching Birds. *Sturniformes*, containing the families Artamidæ, Sturnidæ, Ploceidæ, and Alaudidæ. Also the

Catalogue of the Birds in the British Museum—*continued.*

families Atrichiidæ and Menuridæ. By R. Bowdler Sharpe. Pp. xvi., 701. Woodcuts and 15 coloured Plates. [With Systematic and Alphabetical Indexes.] 1890, 8vo. 1*l.* 8*s.*

Vol. XIV. Catalogue of the Passeriformes, or Perching Birds. *Oligomyodæ*, or the families Tyrannidæ, Oxyrhamphidæ, Pipridæ, Cotingidæ, Phytotomidæ, Philepittidæ, Pittidæ, Xenicidæ, and Eurylæmidæ. By Philip Lutley Sclater, M.A., F.R.S. Pp. xix., 494. Woodcuts and 26 coloured Plates. [With Systematic and Alphabetical Indexes.] 1888, 8vo. 1*l.* 4*s.*

Vol. XV. Catalogue of the Passeriformes, or Perching Birds. *Tracheophonæ*, or the families Dendrocolaptidæ, Formicariidæ, Conopophagidæ, and Pteroptochidæ. By Philip Lutley Sclater, M.A., F.R.S. Pp. xvii., 371. Woodcuts and 20 coloured Plates. [With Systematic and Alphabetical Indexes.] 1890, 8vo. 1*l.*

Vol. XVI. Catalogue of the Picariæ. *Upupæ* and *Trochili*, by Osbert Salvin. *Coraciæ*, of the families Cypselidæ, Caprimulgidæ, Podargidæ, and Steatornithidæ, by Ernst Hartert. Pp. xvi., 703. Woodcuts and 14 coloured Plates. [With Systematic and Alphabetical Indexes.] 1892, 8vo. 1*l.* 16*s.*

Vol. XVII. Catalogue of the Picariæ. *Coraciæ* (contin.) and *Halcyones*, with the families Leptosomatidæ, Coraciidæ, Meropidæ, Alcedinidæ, Momotidæ, Totidæ and Coliidæ, by R. Bowdler Sharpe. *Bucerotes* and *Trogones*, by W. R. Ogilvie Grant. Pp. xi., 522. Woodcuts and 17 coloured Plates. [With Systematic and Alphabetical Indexes.] 1892, 8vo. 1*l.* 10*s.*

Vol. XVIII. Catalogue of the Picariæ. *Scansores*, containing the family Picidæ. By Edward Hargitt. Pp. xv., 597. Woodcuts and 15 coloured Plates. [With Systematic and Alphabetical Indexes.] 1890, 8vo. 1*l.* 6*s.*

Vol. XIX. Catalogue of the Picariæ. *Scansores* and *Coccyges*: containing the families Rhamphastidæ, Galbulidæ, and Bucconidæ, by P. L. Sclater; and the families Indicatoridæ, Capitonidæ, Cuculidæ, and Musophagidæ, by G. E. Shelley. Pp. xii., 484: 13 coloured Plates. [With Systematic and Alphabetical Indexes.] 1891, 8vo. 1*l.* 5*s.*

Catalogue of the Birds in the British Museum—*continued.*

Vol. XX. Catalogue of the Psittaci, or Parrots. By T. Salvadori. Pp. xvii., 658. Woodcuts and 18 coloured Plates. [With Systematic and Alphabetical Indexes.] 1891, 8vo. 1*l.* 10*s.*

Vol. XXI. Catalogue of the Columbæ, or Pigeons. By T. Salvadori. Pp. xvii., 676. 15 coloured Plates. [With Systematic and Alphabetical Indexes.] 1893, 8vo. 1*l.* 10*s.*

Vol. XXII. Catalogue of the Game Birds (*Pterocletes, Gallinæ, Opisthocomi, Hemipodii*). By W. R. Ogilvie Grant. Pp. xvi., 585. 8 coloured Plates. [With Systematic and Alphabetical Indexes.] 1893, 8vo. 1*l.* 6*s.*

Vol. XXIII. Catalogue of the Fulicariæ (Rallidæ and Heliornithidæ) and Alectorides (Aramidæ, Eurypygidæ, Mesitidæ, Rhinochetidæ, Gruidæ, Psophiidæ, and Otididæ). By R. Bowdler Sharpe. Pp. xiii., 353. 9 coloured Plates. [With Systematic and Alphabetical Indexes.] 1894, 8vo. 1*l.*

Vol. XXIV. Catalogue of the Limicolæ. By R. Bowdler Sharpe. Pp. xii., 794. Woodcuts and 7 coloured Plates. [With Systematic and Alphabetical Indexes.] 1896, 8vo. 1*l.* 5*s.*

Vol. XXV. Catalogue of the Gaviæ and Tubinares. Gaviæ. (Terns, Gulls, and Skuas), by Howard Saunders. Tubinares (Petrels and Albatrosses), by Osbert Salvin. Pp. xv., 475. Woodcuts and 8 coloured Plates. [With Systematic and Alphabetical Indexes.] 1896, 8vo. 1*l.* 1*s.*

Vol. XXVI. Catalogue of the Plataleæ, Herodiones, Steganopodes, Pygopodes, Alcæ, and Impennes. Plataleæ (Ibises and Spoonbills) and Herodiones (Herons and Storks), by R. Bowdler Sharpe. Steganopodes (Cormorants, Gannets, Frigate-birds, Tropic-birds, and Pelicans), Pygopodes (Divers and Grebes), Alcæ (Auks), and Impennes (Penguins), by W. R. Ogilvie-Grant. Pp. xvii., 687. Woodcuts and 14 coloured Plates. [With Systematic and Alphabetical Indexes.] 1898, 8vo. 1*l.* 5*s.*

Catalogue of the Birds in the British Museum—*continued*.

Vol. XXVII. Catalogue of the Chenomorphæ (Palamedeæ, Phoenicopteri, Anseres), Crypturi, and Ratitæ. By T. Salvadori. Pp. xv., 636. 19 coloured Plates. [With Systematic and Alphabetical Indexes.] 1895, 8vo. 1*l.* 12*s.*

A Hand-list of the Genera and Species of Birds. [Nomenclator Avium tum Fossilium tum Viventium.] By R. Bowdler Sharpe, LL.D. :—

Vol. V. Pp. xx., 678. [With Systematic and Alphabetical Indexes.] 1909, 8vo. 1*l.*

General Index to . . . Volumes I.–V. Edited by W. R. Ogilvie-Grant. Pp. v., 199. 1912, 8vo. 10*s.*

———————— Edition on large paper, printed on one side only. Pp. v., 388. 1912, fol. 1*l.*

List of the Specimens of Birds in the Collection of the British Museum. By George Robert Gray :—

Part III., Sections III. and IV. Capitonidæ and Picidæ. Pp. 137. [With Index.] 1868, 12mo. 1*s.* 6*d.*

Part IV. Columbæ. Pp. 73. [With Index.] 1856, 12mo. 1*s.* 9*d.*

Part V. Gallinæ. Pp. iv., 120. [With an Alphabetical Index.] 1867, 12mo. 1*s.* 6*d.*

Catalogue of the Birds of the Tropical Islands of the Pacific Ocean in the Collection of the British Museum. By George Robert Gray, F.L.S., &c. Pp. 72. [With an Alphabetical Index.] 1859, 8vo. 1*s.* 6*d.*

Catalogue of the Collection of Birds' Eggs in the British Museum (Natural History) :—

Vol. I. Ratitæ. Carinatæ (Tinamiformes—Lariformes). By Eugene W. Oates. Pp. xxiii., 252. 18 Coloured Plates. [With Systematic and Alphabetical Indexes.] 1901, 8vo. 1*l.* 10*s.*

Vol. II. Carinatæ (Charadriiformes—Strigiformes). By Eugene W. Oates. Pp. xx., 400. 15 Coloured Plates. [With Systematic and Alphabetical Indexes.] 1902 8vo. 1*l.* 10*s.*

Catalogue of the Collection of Birds' Eggs in the British Museum (Natural History)—*continued.*

Vol. III. Carinatæ (Psittaciformes — Passeriformes) By Eugene W. Oates and Capt. Savile G. Reid. Pp. xxiii., 349. 10 Coloured Plates. [With Systematic and Alphabetical Indexes.] 1903, 8vo. 1*l.* 5*s.*

Vol. IV. Carinatæ (Passeriformes continued). By Eugene W. Oates, assisted by Capt. Savile G. Reid. Pp. xviii., 352. 14 Coloured Plates. [With Systematic and Alphabetical Indexes.] 1905, 8vo. 1*l.* 10*s.*

Vol. V. Carinatæ (Passeriformes completed). By W. R. Ogilvie-Grant. Pp. xxiii., 547. 22 Coloured Plates. [With Systematic and Alphabetical Indexes.] 1912, 8vo. 2*l.* 7*s.* 6*d.*

REPTILES.

Catalogue of the Tortoises, Crocodiles, and Amphisbænians in the Collection of the British Museum. By Dr. J. E. Gray, F.R.S., &c. Pp. viii., 80. [With an Alphabetical Index.] 1844, 12mo. 1*s.*

Catalogue of Shield Reptiles in the Collection of the British Museum. By John Edward Gray, F.R.S., &c.:—

Appendix. Pp. 28. 1872, 4to. 2*s.* 6*d.*

Part II. Emydosaurians, Rhynchocephalia, and Amphisbænians. Pp. vi., 41. 25 Woodcuts. 1872, 4to. 3*s.* 6*d.*

Hand-List of the Specimens of Shield Reptiles in the British Museum. By Dr. J. E. Gray, F.R.S., F.L.S., &c. Pp. iv., 124. [With an Alphabetical Index.] 1873, 8vo. 4*s.*

Catalogue of the Chelonians, Rhynchocephalians, and Crocodiles in the British Museum (Natural History). New Edition. By George Albert Boulenger. Pp. x., 311. 73 Woodcuts and 6 Plates. [With Systematic and Alphabetical Indexes.] 1889, 8vo. 15*s.*

Catalogue of the Lizards in the British Museum (Natural History). Second Edition. By George Albert Boulenger :—

Vol. II. Iguanidæ, Xenosauridæ, Zonuridæ, Anguidæ, Anniellidæ, Helodermatidæ, Varanidæ, Xantusiidæ,

Catalogue of the Lizards in the British Museum—*continued.*

Teiidæ, Amphisbænidæ. Pp. xiii., 497. 24 Plates. [With Systematic and Alphabetical Indexes.] 1885, 8vo. 1*l.*

Vol. III. Lacertidæ, Gerrhosauridæ, Scincidæ, Anelytropidæ, Dibamidæ, Chamæleontidæ. Pp. xii., 575. 40 Plates. [With a Systematic Index and an Alphabetical Index to the three volumes.] 1887, 8vo. 1*l.* 6*s.*

Catalogue of the Snakes in the British Museum (Natural History). By George Albert Boulenger, F.R.S., &c. :—

Vol. I., containing the families Typhlopidæ, Glauconiidæ, Boidæ, Ilysiidæ, Uropeltidæ, Xenopeltidæ, and Colubridæ aglyphæ (part). Pp. xiii., 448 : 26 Woodcuts and 28 Plates. [With Systematic and Alphabetical Indexes.] 1893, 8vo. 1*l.* 1*s.*

Vol. II., containing the conclusion of the Colubridæ aglyphæ. Pp. xi., 382 : 25 Woodcuts and 20 Plates. [With Systematic and Alphabetical Indexes.] 1894, 8vo. 17*s.* 6*d.*

Vol. III., containing the Colubridæ (Opisthoglyphæ and Proteroglyphæ), Amblycephalidæ, and Viperidæ. Pp. xiv., 727 : 37 Woodcuts and 25 Plates. [With Systematic Index, and Alphabetical Index to the 3 volumes.] 1896, 8vo. 1*l.* 6*s.*

Catalogue of Colubrine Snakes in the Collection of the British Museum. By Dr. Albert Günther. Pp. xvi., 281. [With Geographic, Systematic, and Alphabetical Indexes.] 1858, 12mo. 4*s.*

BATRACHIANS.

Catalogue of the Batrachia Salientia in the Collection of the British Museum. By Dr. Albert Günther. Pp. xvi., 160. 12 Plates. [With Systematic, Geographic, and Alphabetical Indexes.] 1858, 8vo. 6*s.*

FISHES.

Catalogue of the Fishes in the British Museum. Second Edition. Vol. I. Catalogue of the Perciform Fishes in the British Museum. Vol. I. Containing the Centrarchidæ Percidæ, and Serranidæ (part). By George Albert Boulenger, F.R.S. Pp. xix., 394. Woodcuts and 15 Plates. [With Systematic and Alphabetical Indexes.] 1895, 8vo. 15*s.*

Catalogue of Lophobranchiate Fish in the Collection of the British Museum. By J. J. Kaup, Ph.D., &c. Pp. iv., 80. 4 Plates. [With an Alphabetical Index.] 1856, 12mo. 2*s.*

Catalogue of the Fresh-water Fishes of Africa in the British Museum (Natural History). By G. A. Boulenger, F.R.S. :—

Vol. I. Pp. xi., 373 : 270 text-figures. [With Systematic and Alphabetical Indexes.] 1909, imp. 8vo. 1*l.* 12*s.* 6*d.*

Vol. II. Pp. xii., 529 : 382 text-figures. [With Systematic and Alphabetical Indexes.] 1911, imp. 8vo. 2*l.* 5*s.*

MOLLUSCA.

Guide to the Systematic Distribution of Mollusca in the British Museum. Part I. By John Edward Gray, Ph.D., F.R.S., &c. Pp. xii., 230. 121 Woodcuts. 1857, 8vo. 5*s.*

Catalogue of Pulmonata, or Air Breathing Mollusca, in the Collection of the British Museum. Part I. By Dr. Louis Pfeiffer. Pp. iv., 192. Woodcuts. 1855, 12mo. 2*s.* 6*d.*

Catalogue of the Auriculidæ, Proserpinidæ, and Truncatellidæ in the Collection of the British Museum. By Dr. Louis Pfeiffer. Pp. iv., 150. Woodcuts. 1857, 12mo. 1*s.* 9*d.*

List of the Mollusca in the Collection of the British Museum. By John Edward Gray, Ph.D., F.R.S., &c. :—

Part II. Olividæ. Pp. 41. 1865, 12mo. 1*s.*

Catalogue of the Conchifera, or Bivalve Shells, in the Collection of the British Museum. By M. Deshayes :—

Part I. Veneridæ, Cyprinidæ, Glauconomidæ, and Petricoladæ. Pp. iv., 216. 1853, 12mo. 3*s.*

Part II. Petricoladæ (concluded); Corbiculadæ Pp. 217–292. [With an Alphabetical Index to the two parts.] 1854, 12mo. 6*d.*

BRACHIOPODA.

Catalogue of Brachiopoda Ancylopoda or Lamp Shells in the Collection of the British Museum. [*Issued as* "Catalogue of the Mollusca, Part IV."] Pp. iv., 128. 25 Woodcuts. [With an Alphabetical Index.] 1853, 12mo. 3*s.*

POLYZOA.

Catalogue of Marine Polyzoa in the Collection of the British Museum. Part III. Cyclostomata. By George Busk, F.R.S. Pp. viii., 39. 38 plates. [With a Systematic Index.] 1875, 8vo. 5*s.*

CRUSTACEA.

Catalogue of the Specimens of Amphipodous Crustacea in the Collection of the British Museum. By C. Spence Bate, F.R.S., &c. Pp. iv., 399. 58 Plates. [With an Alphabetical Index.] 1862, 8vo. 1*l.* 5*s.*

ARACHNIDA.

Descriptive Catalogue of the Spiders of Burma, based upon the Collection made by Eugene W. Oates and preserved in the British Museum. By T. Thorell. Pp. xxxvi., 406. [With Systematic List and Alphabetical Index.] 1895, 8vo. 10*s.* 6*d.*

INSECTS.

Coleopterous Insects.

Nomenclature of Coleopterous Insects in the Collection of the British Museum :—

Part VII. Longicornia, I. By Adam White. Pp. iv., 174. 4 Plates. 1853, 12mo. 2*s.* 6*d.*

Part VIII. Longicornia, II. By Adam White. Pp. 237. 6 Plates. 1855, 12mo. 3*s.* 6*d.*

Illustrations of Typical Specimens of Coleoptera in the Collection of the British Museum. Part I. Lycidæ. By Charles Owen Waterhouse. Pp. x., 83. 18 Coloured Plates. [With Systematic and Alphabetical Indexes.] 1879, 8vo. 16*s.*

Catalogue of the Coleopterous Insects of Madeira in the Collection of the British Museum. By T. Vernon Wollaston, M.A., F.L.S. Pp. xvi., 234 : 1 Plate. [With a Topographical Catalogue and an Alphabetical Index.] 1857, 8vo. 3*s.*

Catalogue of the Coleopterous Insects of the Canaries in the Collection of the British Museum. By T. Vernon Wollaston, M.A., F.L.S. Pp. xiii., 648. [With Topographical and Alphabetical Indexes.] 1864, 8vo. 10*s.* 6*d.*

Catalogue of Halticidæ in the Collection of the British Museum. By the Rev. Hamlet Clark, M.A., F.L.S. Physapodes and Œdipodes. Part I. Pp. xii., 301. Frontispiece and 9 Plates. 1860, 8vo. 7*s.*

Catalogue of Hispidæ in the Collection of the British Museum. By Joseph S. Baly, M.E.S., &c. Part I. Pp. x., 172. 9 Plates. [With an Alphabetical Index.] 1858, 8vo. 6*s*.

Hymenopterous Insects.

Catalogue of Hymenopterous Insects in the Collection of the British Museum. By Frederick Smith. 12mo. :—

Part II. Apidæ. Pp. 199–465. 6 Plates. [With an Alphabetical Index.] 1854. 6*s*.

Part III. Mutillidæ and Pompilidæ. Pp. 206. 6 Plates. 1855. 6*s*.

Part IV. Sphegidæ, Larridæ, and Crabronidæ. Pp. 207–497. 6 Plates. [With an Alphabetical Index.] 1856. 6*s*.

Part V. Vespidæ. Pp. 147. 6 Plates. [With an Alphabetical Index.] 1857. 6*s*.

Part VII. Dorylidæ and Thynnidæ. Pp. 76. 3 Plates. [With an Alphabetical Index.] 1859. 2*s*.

List of Hymenoptera, with descriptions and figures of the Typical Specimens in the British Museum. Vol. I., Tenthredinidæ and Siricidæ. By W. F. Kirby. Pp. xxviii., 450. 16 Coloured Plates. [With Systematic and Alphabetical Indexes.] 1882, 8vo. 1*l*. 18*s*.

A Revision of the Ichneumonidæ, based on the Collection in the British Museum (Natural History). With descriptions of new Genera and Species. By Claude Morley, F.Z.S., F.E.S. :—

Part I. Tribes Ophionides and Metopiides. Pp. xi., 88 : 1 Coloured Plate. [With Systematic and Alphabetical Indexes.] 1912, 8vo. 4*s*.

Part II. Tribes Rhyssides, Echthromorphides, Anomalides, and Paniscides. Pp. viii., 140. 1 Coloured Plate. [With Systematic and Alphabetical Indexes, &c.] 1913, 8vo. 5*s*. 6*d*.

Dipterous Insects.

A Monograph of the Culicidæ, or Mosquitoes. Mainly compiled from the Collections received at the British Museum from various parts of the world in connection with the Investigation into the cause of Malaria conducted by the

Colonial Office and the Royal Society. By Fred. V. Theobald, M.A., &c. :—

Vol. III. Pp. xvii., 359 : 17 plates, 1 diagram, and 193 illustrations in text. 1903, 8vo. 1*l.* 1*s.*

Vol. IV. Pp. xix., 639 : 16 plates and 297 text-figures. [With Index.] 1907, 8vo. 1*l.* 12*s.* 6*d.*

Vol. V. Pp. xv., 646 : 6 plates and 261 text-figures. [With Index.] 1910, 8vo. 1*l.* 5*s.*

Handbook of the Tsetse-Flies [Genus Glossina]. By Ernest Edward Austen. With 10 coloured plates and 24 text-figures, by A. J. Engel Terzi, and 1 map. Pp. x., 110. [With Index.] 1911, roy. 8vo. 5*s.* 6*d.*

Illustrations of African Blood-sucking Flies other than Mosquitoes and Tsetse-Flies. By Ernest Edward Austen, with coloured figures by Grace Edwards. Pp. xv., 221 : 13 coloured plates, 3 text-figures. 1909, roy. 8vo. 1*l.* 7*s.* 6*d.*

Lepidopterous Insects.

Catalogue of the Lepidoptera Phalænæ in the British Museum. By Sir George F. Hampson, Bart. :—

Vol. I. Catalogue of the Syntomidæ. Pp. xxi., 559 : 285 woodcuts. [With Systematic and Alphabetical Indexes.] 1898, 8vo. 15*s.*

——Atlas of 17 Coloured Plates, 8vo. 15*s.*

Vol. II. Catalogue of the Arctiadæ (Nolinæ, Lithosianæ). Pp. xx., 589 : 411 woodcuts. [With Systematic and Alphabetical Indexes.] 1900, 8vo. 18*s.*

——Atlas of 18 Coloured Plates (xviii.–xxxv.), 8vo. 15*s.*

Vol. III. Catalogue of the Arctiadæ (Arctianæ) and Agaristidæ. Pp. xix., 690 : 294 woodcuts. [With Systematic and Alphabetical Indexes.] 1901, 8vo. 15*s.*

——Atlas of 19 Coloured Plates (xxxvi.–liv.), 8vo. 16*s.*

Vol. IV. Catalogue of the Noctuidæ [Agrotinæ]. Pp. xx., 689 : 125 woodcuts. [With Systematic and Alphabetical Indexes.] 1903, 8vo. 15*s.*

——Atlas of 23 Coloured Plates (lv.–lxxvii.), 8vo. 16*s.*

Vol. V. Catalogue of the Noctuidæ [Hadeninæ]. Pp. xvi., 634 : 172 woodcuts. [With Systematic and Alphabetical Indexes.] 1905, 8vo. 15*s.*

——Atlas of 18 Coloured Plates (lxxviii.–xcv.), 8vo. 15*s.*

Catalogue of Lepidoptera Phalænæ—*continued.*

Vol. VI. Catalogue of the Noctuidæ [Cucullianæ]. Pp. xiv., 532 : 172 woodcuts. [With Systematic and Alphabetical Indexes.] 1906, 8vo. 15*s.*

——Atlas of 12 Coloured Plates (xcvi.–cvii.), 8vo. 10*s.*

Vol. VII. Catalogue of the Noctuidæ [Acronyctinæ]. Pp. xv., 709 : 184 woodcuts. [With Systematic and Alphabetical Indexes.] 1908, 8vo. 17*s.*

——Atlas of 15 Coloured Plates (cviii.–cxxii.), 8vo. 13*s.*

Vol. VIII. Catalogue of the Noctuidæ [Acronyctinæ, II.]. Pp. xiv., 583 : 162 woodcuts. [With Table of the Phylogeny of the Acronyctinæ, and Systematic and Alphabetical Indexes.] 1909, 8vo. 15*s.*

——Atlas of 14 Coloured Plates (cxxiii.–cxxxvi.), 8vo. 12*s.*

Vol. IX. Catalogue of the Noctuidæ [Acronyctinæ, III.] Pp. xv., 552 : 247 woodcuts. [With Table of the Phylogeny of the Acronyctinæ, and Systematic and Alphabetical Indexes.] 1910, 8vo. 15*s.*

——Atlas of 11 Coloured Plates (cxxxvii.–cxlvii.), 8vo. 12*s.*

Vol. X. Catalogue of the Noctuidæ [Erastrianæ]. Pp. xix., 829 : 214 woodcuts. [With Table of the Phylogeny of the Erastrianæ, and Systematic and Alphabetical Indexes.] 1910, 8vo. 1*l.*

——Atlas of 26 Coloured Plates (cxlviii.–clxxiii.). 1911, 8vo. 1*l.*

Vol. XI. Catalogue of the Noctuidæ [Sub-families Eutelianæ, Stictopterinæ, Sarrothripinæ, and Acontianæ.] Pp. xvii., 689 : 275 woodcuts. [With Systematic and Alphabetical Indexes.] 1912, 8vo. 1*l.*

——Atlas of 16 Coloured Plates (clxxiv.–cxci.), 8vo. 17*s.* 6*d.*

Vol. XII. Catalogue of the Noctuidæ [Sub-family Catocalinæ, part]. Pp. xiii., 626 : 134 woodcuts. [With Table of the Phylogeny of the Catocalinæ, and Systematic and Alphabetical Indexes.] 1913, 8vo. 17*s.* 6*d.*

——Atlas of 30 Coloured Plates (cxcii–ccxxi.), 8vo. 1*l.* 5*s.*

Illustrations of Typical Specimens of Lepidoptera Heterocera in the Collection of the British Museum:—

Part V. By Arthur Gardiner Butler. Pp. xii., 74. 78–100 Coloured Plates. [With a Systematic Index.] 1881, 4to. 2*l.* 10*s.*

Part VI. By Arthur Gardiner Butler. Pp. xv., 89. 101–120 Coloured Plates. [With a Systematic Index.] 1886, 4to. 2*l.* 4*s.*

Part VII. By Arthur Gardiner Butler. Pp. iv., 124. 121–138 Coloured Plates. [With a Systematic List.] 1889, 4to. 2*l.*

Part VIII. The Lepidoptera Heterocera of the Nilgiri District. By George Francis Hampson. Pp. iv., 144. 139–156 Coloured Plates. [With a Systematic List.] 1891, 4to. 2*l.*

Part IX. The Macrolepidoptera Heterocera of Ceylon. By George Francis Hampson. Pp. v., 182. 157–176 Coloured Plates. [With a General Systematic List of Species collected in, or recorded from, Ceylon.] 1893, 4to. 2*l.* 2*s.*

Catalogue of the Collection of Palæarctic Butterflies formed by the late John Henry Leech, and presented to the Trustees of the British Museum by his Mother, Mrs. Eliza Leech. By Richard South, F.E.S. Pp. vi., 228. 2 Coloured Plates. With a Portrait and Biographical Memoir of Mr. Leech. 1902, 4to. 1*l.*

Catalogue of Diurnal Lepidoptera described by Fabricius in the Collection of the British Museum. By Arthur Gardiner Butler, F.L.S., &c. Pp. iv., 303. 3 Plates. 1869, 8vo. 7*s.* 6*d.*

List of the Specimens of Lepidopterous Insects in the Collection of the British Museum. By Francis Walker. 12mo.:—

Part XXVIII. Tortricites and Tineites. Pp. 287–561. 1863. 4*s.*

Part XXXI. Supplement. Pp. 1–321. 1864. 5*s.*

Part XXXIII.———— Part 3. Pp. 707–1120. 1865. 6*s.*

Neuropterous Insects.

Catalogue of the Specimens of Neuropterous Insects in the Collection of the British Museum. By Dr. H. Hagen. Part I. Termitina. Pp. 34. 1858, 12mo. 6*d.*

Orthopterous Insects.

Catalogue of Orthopterous Insects in the Collection of the British Museum. Part I. Phasmidæ. By John Obadiah Westwood, F.L.S., &c. Pp. 195. 48 Plates. [With an Alphabetical Index.] 1859, 4to. 3*l.*

Catalogue of the Specimens of Blattariæ in the Collection of the British Museum. By Francis Walker, F.L.S., &c. Pp. 239. [With an Alphabetical Index.] 1868, 8vo. 5*s.* 6*d.*

Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum. By Francis Walker, F.L.S., &c. :—

Part II. Locustidæ (continued). Pp. 225–423. [With an Alphabetical Index.] 1869, 8vo. 4*s.* 6*d.*

Part III. Locustidæ (continued).—Acrididæ. Pp. 425–604. [With an Alphabetical Index.] 1870, 8vo. 4*s.*

Part IV. Acrididæ (continued). Pp. 605–809. [With an Alphabetical Index.] 1870, 8vo. 6*s.*

Part V. Tettigidæ.—Supplement to the Catalogue of Blattariæ.—Supplement to the Catalogue of Dermaptera Saltatoria (with remarks on the Geographical Distribution of Dermaptera). Pp. 811–850; 43; 116. [With Alphabetical Indexes.] 1870, 8vo. 6*s.*

Synonymic Catalogue of Orthoptera. By W. F. Kirby :—

Vol. I. Orthoptera Euplexoptera, Cursoria, et Gressoria. (Forficulidæ, Hemimeridæ, Blattidæ, Mantidæ, Phasmidæ.) Pp. x., 501. [With Index.] 1904, 8vo. 10*s.*

Vol. II. Orthoptera Saltatoria, Part I. (Achetidæ et Phasgonuridæ.) Pp. viii., 562. [With Index.] 1906, 8vo. 15*s.*

Vol. III. Orthoptera Saltatoria, Part II. (Locustidæ vel Acridiidæ.) Pp. vii., 674. [With Index.] 1910, 8vo. 1*l.*

Homopterous Insects.

A Synonymic Catalogue of Homoptera. Part I. Cicadidæ By W. L. Distant. Pp. 207. [Index.] 1906, 8vo. 5*s.*

VERMES.

Catalogue of the Species of Entozoa, or Intestinal Worms, contained in the Collection of the British Museum. By Dr. Baird. Pp. iv., 132. 2 Plates. [With an Index of the Animals in which the Entozoa mentioned in the Catalogue are found, and an Index of Genera and Species.] 1853, 12mo. 2*s*.

Catalogue of the Chætopoda in the British Museum (Natural History). A. Polychæta: Part I.—Arenicolidæ. By J. H. Ashworth, D.Sc. Pp. xii., 175. 15 Plates, 68 Text-figures. [With Systematic and General Indexes, List of Text-figures, Description of Plates, &c.] 1912, roy. 8vo. 1*l*. 7*s*. 6*d*.

ANTHOZOA.

Catalogue of Sea-pens or Pennatulariidæ in the Collection of the British Museum. By J. E. Gray, F.R.S., &c. Pp. iv., 40. 2 Woodcuts. 1870, 8vo. 1*s*. 6*d*.

Catalogue of Lithophytes or Stony Corals in the Collection of the British Museum. By J. E. Gray, F.R.S., &c. Pp. iv., 51. 14 Woodcuts. 1870, 8vo. 3*s*.

Catalogue of the Madreporarian Corals in the British Museum (Natural History):—

Vol. I. The Genus Madrepora. By George Brook. Pp. xi., 212. 35 Collotype Plates. [With Systematic and Alphabetical Indexes, and Explanation of the Plates.] 1893, 4to. 1*l*. 4*s*.

Vol. II. The Genus Turbinaria; the Genus Astræopora. By Henry M. Bernard, M.A. Cantab., F.L.S., F.Z.S. Pp. iv., 106. 30 Collotype and 3 Lithographic Plates. [With Index of Generic and Specific Names, and Explanation of the Plates.] 1896, 4to. 18*s*.

Vol. III. The Genus Montipora; the Genus Anacropora. By Henry M. Bernard, M.A., &c. Pp. vii., 192. 30 Collotype and 4 Lithographic Plates. [With Systematic Index, Index of Generic and Specific Names, and Explanation of the Plates.] 1897, 4to. 1*l*. 4*s*.

Vol. IV. The Family Poritidæ. I.—The Genus Goniopora. By Henry M. Bernard, M.A. Pp. viii., 206. 12 Collotype and 4 Lithographic Plates. [With Index of Generic and Specific Names, and Explanation of the Plates.] 1903, 4to. 1*l*.

Vol. V. The Family Poritidæ. II.—The Genus Porites. Part I.—Porites of the Indo-Pacific Region. By Henry M. Bernard, M.A. Pp. vi., 303. 35 Plates. [With Index of Generic and Specific Names and Explanation of the Plates.] 1905, 4to. 1*l*. 15*s*.

Catalogue of the Madreporarian Corals in the British Museum (Natural History)—*continued.*

Vol. VI. The Family Poritidæ. II.—The Genus Porites. Part II.—Porites of the Atlantic and West Indies, with the European Fossil Forms. The Genus Goniopora, a supplement to Vol. IV. By Henry M. Bernard, M.A. Pp. vi., 173. 16 Collotype and 1 Lithographic Plates. [With Index of Generic and Specific Names, and Explanation of the Plates.] 1906, 4to. 1*l.*

BRITISH ANIMALS.

Catalogue of British Birds in the Collection of the British Museum. By George Robert Gray, F.L.S., F.Z.S., &c. Pp. xii., 248. [With a List of Species.] 1863, 8vo. 3*s.* 6*d.*

Catalogue of the British Species of Pisidium (Recent and Fossil) in the Collections of the British Museum (Natural History), with Notes on those of Western Europe. By B. B. Woodward, F.L.S., &c. Pp. ix., 144. 30 Plates. [With Bibliography and Index.] 1913, 8vo. 10*s.* 6*d.*

Catalogue of British Hymenoptera in the Collection of the British Museum. Second edition. Part I. Andrenide and Apidæ. By Frederick Smith, M.E.S. New issue Pp. xi. 236. 11 Plates. [With Systematic and Alphabetical Index.] 1891, 8vo. 6*s.*

Catalogue of British Fossorial Hymenoptera, Formicidæ, and Vespidæ in the Collection of the British Museum. By Frederick Smith, V.P.E.S. Pp. 236. 6 Plates. [With an Alphabetical Index.] 1858, 12mo. 6*s.*

Catalogue of British Hymenoptera of the Family Chalcididæ By Claude Morley, F.Z.S., F.E.S. Pp. 74. [Index.] 1910, 8vo. 3*s.* 6*d.*

Illustrations of British Blood-sucking Flies, with notes by Ernest Edward Austen, Assistant, Department of Zoology, British Museum (N.H.). Pp. 74. 34 Coloured Plates. 1906, roy. 8vo. 1*l.* 5*s.*

A Catalogue of the British Non-parasitical Worms in the Collection of the British Museum. By George Johnston, M.D., Edin., F.R.C.L., Ed., LL.D., Marischal Coll., Aberdeen, &c. Pp. 365. Woodcuts and 24 Plates. [With an Alphabetical Index.] 1865, 8vo. 7*s.*

Catalogue of the British Echinoderms in the British Museum (Natural History). By F. Jeffrey Bell, M.A. Pp. xvii., 202. Woodcuts and 16 Plates (2 Coloured). [With Table of Contents, Tables of Distribution, Alphabetical Index, Description of the Plates, &c.] 1892, 8vo. 12*s.* 6*d.*

List of the Specimens of British Animals in the Collection of the British Museum ; with Synonyma and References to figures. 12mo.:—

Part V. Lepidoptera. By J. F. Stephens. 2nd Edition. Revised by H. T. Stainton and E. Shepherd. Pp. iv., 224. 1856. 1*s.* 9*d.*

Part VI. Hymenoptera. By F. Smith. Pp. 134. 1851. 2*s.*

Part VII. Mollusca, Acephala and Brachiopoda. By Dr. J. E. Gray. Pp. iv., 167. 1851. 3*s.* 6*d.*

Part VIII. Fish. By Adam White. Pp. xxiii., 164. (With Index and List of Donors.) 1851. 3*s.* 6*d.*

Part XI. Anoplura, or Parasitic Insects. By H. Denny. Pp. iv., 51. 1852. 1*s.*

Part XII. Lepidoptera (continued). By James F. Stephens. Pp. iv., 54. 1852. 9*d.*

Part XIII. Nomenclature of Hymenoptera. By Frederick Smith. Pp. iv., 74. 1853. 1*s.* 4*d.*

Part XIV. Nomenclature of Neuroptera. By Adam White. Pp. iv., 16. 1853. 6*d.*

Part XV. Nomenclature of Diptera, I. By Adam White. Pp. iv., 42. 1853. 1*s.*

Part XVI. Lepidoptera (completed). By H. T. Stainton. Pp. 199. [With an Index.] 1854. 3*s.*

PLANTS.

Illustrations of Australian Plants collected in 1770 during Captain Cook's Voyage round the World in H.M.S. "Endeavour." By the Right Hon. Sir Joseph Banks, Bart., K.B., P.R.S., and Dr. Daniel Solander, F.R.S. [Being a series of lithographic reproductions of copper-plates engraved after paintings by F. P. Nodder, James Miller, J. F. Miller, and John Cleveley.] With Introduction and Determinations by James Britten, F.L.S., Senior Assistant, Department of Botany, British Museum :—

Part I.—101 Plates, with 31 pages of descriptive text. 1900, fol. 1*l.* 5*s.*

Part II.—142 Plates (pls. 101–243), with 41 pages of descriptive text (pp. 35–75). 1901, fol. 1*l.* 15*s.*

Illustrations of Australian Plants &c.—*continued.*

Part III.—77 Plates (pls. 244–318, 45A, and 122), with 26 pages of descriptive text, including Index to the whole work (pp. 77–102), and 3 maps. 1905, fol. 1*l.* 5*s.*

Catalogue of the African Plants collected by Dr. Friedrich Welwitsch in 1853–61 :—

Vol. I. Dicotyledons. By William Philip Hiern, M.A. F.L.S., &c. :—

Part I. [Ranunculaceæ to Rhizophoraceæ.] Pp. xxvi., 336. [With Portrait of Dr. Welwitsch. Introduction, Bibliography, and Index of Genera.] 1896. 8vo. 7*s.* 6*d.*

Part II. Combretaceæ to Rubiaceæ. Pp. 337–510. [With Index of Genera.] 1898, 8vo. 4*s.*

Part III. Dipsaceæ to Scrophulariaceæ. Pp. 511–784. [With Index of Genera.] 1898, 8vo. 5*s.*

Part IV. Lentibulariaceæ to Ceratophylleæ. Pp. 785–1035. [With Index.] 1900, 8vo. 5*s.*

Vol. II. Monocotyledons, Gymnosperms, and Cryptogams :—

Part I. Monocotyledons and Gymnosperms. By Alfred Barton Rendle, M.A., D.Sc., F.L.S., Assistant, Department of Botany. Pp. 260. [With Index of Genera.] 1899, 8vo. 6*s.*

Part II. Cryptogamia. Pp. 261–566. [With Table of Errata, and General Index to the whole work.] 1901, 8vo. 6*s.*

Vascular Cryptogams	...	By William Carruthers, F.R.S.
Mosses	...	„ Antony Gepp, M.A., F.L.S.
Hepatics	...	„ F. Stephani.
Marine Algæ ...	...	„ Ethel S. Barton.
Freshwater Algæ ...	...	„ W. West, F.L.S., and G. S. West, B.A.
Diatomaceæ ...	...	„ Thomas Comber, F.L.S.
Lichenes	...	„ E. A. Wainio.
Fungi	...	„ Annie Lorrain Smith.
Mycetozoa	...	„ Arthur Lister, F.R.S.

Catalogue of the Plants collected by Mr. and Mrs. P. A. Talbot in the Oban District, South Nigeria. By A. B. Rendle, M.A., D.Sc., F.R.S., E. G. Baker, F.L.S., H. F. Wernham, B.Sc., S. Moore, F.L.S., and others. Pp. x., 157 : 17 Plates. [With Index and List of Plates.] 1913, 8vo. 9*s.*

Flora of Jamaica, containing descriptions of the Flowering Plants known from the Island. By William Fawcett, B.Sc., F.L.S., etc., and A. B. Rendle, M.A., D.Sc., F.R.S., F.L.S., etc. Vol. I. Orchidaceæ. Pp. xx., 150 : 32 Plates. [With Index of Genera and Species.] 1910, 8vo. 10*s.* 6*d.*

Synopsis of the British Basidiomycetes : a Descriptive Catalogue of the Drawings and Specimens in the Department of Botany, British Museum. By Worthington George Smith, F.L.S. Pp. 531. 5 Plates and 145 Figures in Text. [With Index.] 1908, 8vo. 10*s*.

A Monograph of the British Lichens : a Descriptive Catalogue of the Species in the Department of Botany, British Museum. Part II. By Annie Lorrain Smith, F.L.S. Pp. [viii.,] 409 : 59 Plates. [With List of Plates, Glossary, and Index.] 1911, 8vo. 1*l*.

A Monograph of the Mycetozoa : a Descriptive Catalogue of the Species in the Herbarium of the British Museum. By Arthur Lister, F.R.S., F.L.S. Second Edition, revised by Gulielma Lister, F.L.S. Pp. 302. 201 Plates (120 coloured). 56 Woodcuts. [With Indexes, Bibliography, Glossary, etc.] 1911, 8vo. 1*l*. 10*s*.

List of British Diatomaceæ in the Collection of the British Museum. By the Rev. W. Smith, F.L.S., &c. Pp. iv., 55. 1859, 12mo. 1*s*.

FOSSILS.

Catalogue of the Fossil Mammalia in the British Museum (Natural History). By Richard Lydekker, B.A., F.G.S.:—

Part I. Containing the Orders Primates, Chiroptera, Insectivora, Carnivora, and Rodentia. Pp. xxx., 268. 33 Woodcuts. [With Systematic and Alphabetical Indexes.] 1885, 8vo. 5*s*.

Part II. Containing the Order Ungulata, Suborder Artiodactyla. Pp. xxii., 324. 39 Woodcuts. [With Systematic and Alphabetical Indexes.] 1885, 8vo. 6*s*.

Part III. Containing the Order Ungulata, Suborders Perissodactyla, Toxodontia, Condylarthra, and Amblypoda. Pp. xvi., 186. 30 Woodcuts. [With Systematic Index, and Alphabetical Index of Genera and Species, including Synonyms.] 1886, 8vo. 4*s*.

Part IV. Containing the Order Ungulata, Suborder Proboscidea. Pp. xxiv., 235. 32 Woodcuts. [With Systematic Index, and Alphabetical Index of Genera and Species, including Synonyms.] 1886, 8vo. 5*s*.

Part V. Containing the Group Tillodontia, the Orders Sirenia, Cetacea, Edentata, Marsupialia, Monotremata, and Supplement. Pp. xxxv., 345. 55 Woodcuts. [With Systematic Index, and Alphabetical Index of Genera and Species, including Synonyms.] 1887, 8vo. 6*s*.

Catalogue of the Fossil Birds in the British Museum (Natural History). By Richard Lydekker, B.A. Pp. xxvii., 368. 75 Woodcuts. [With Systematic Index, and Alphabetical Index of Genera and Species, including Synonyms.] 1891, 8vo. 10*s*. 6*d*.

Catalogue of the Fossil Reptilia and Amphibia in the British Museum (Natural History). By Richard Lydekker, B.A., F.G.S. :—

Part I. Containing the Orders Ornithosauria, Crocodilia, Dinosauria, Squamata, Rhynchocephalia, and Proterosauria. Pp. xxviii., 309. 69 Woodcuts. [With Systematic Index, and Alphabetical Index of Genera and Species, including Synonyms.] 1888, 8vo. 7*s.* 6*d.*

Part II. Containing the Orders Ichthyopterygia and Sauropterygia. Pp. xxi., 307. 85 Woodcuts. [With Systematic Index, and Alphabetical Index of Genera and Species, including Synonyms.] 1889, 8vo. 7*s.* 6*d.*

Part III. Containing the Order Chelonia. Pp. xviii., 239. 53 Woodcuts. [With Systematic Index, and Alphabetical Index of Genera and Species including Synonyms.] 1889, 8vo. 7*s.* 6*d.*

Part IV. Containing the Orders Anomodontia, Ecaudata, Caudata, and Labyrinthodontia; and Supplement. Pp. xxiii., 295. 66 Woodcuts. [With Systematic Index, Alphabetical Index of Genera and Species, including Synonyms, and Alphabetical Index of Genera and Species to the entire work.] 1890, 8vo. 7*s.* 6*d.*

A descriptive Catalogue of the Marine Reptiles of the Oxford Clay. Based on the Leeds Collection in the British Museum (Natural History), London. By C. W. Andrews, D.Sc., F.R.S. :—

Part I. Families Ophthalmosauridæ, Elasmosauridæ. Pp. xxiii., 205 : 94 Text-figures, 11 Plates. [With Systematic and Alphabetical Indexes, List of Illustrations, Explanations of Plates, &c.] 1910, 4to. 1*l.* 5*s.*

Part II. Families Pliosauridæ, Teleosauridæ, and Geosauridæ. Pp. xxiv., 206 : 73 Text-figures, 14 Plates. [With Systematic and Alphabetical Indexes, List of Illustrations in Text, Explanations of Plates, &c.] 1913, 4to. 1*l.* 5*s.*

Catalogue of the Fossil Fishes in the British Museum (Natural History). By Arthur Smith Woodward, LLD., F.R.S., F.G.S., &c. :—

Part I. Containing the Elasmobranchii. Pp. xlvii., 474. 13 Woodcuts and 17 Plates. [With Alphabetical Index, and Systematic Index of Genera and Species.] 1889, 8vo. 1*l.* 1*s.*

Part II. Containing the Elasmobranchii (Acanthodii), Holocephali, Ichthyodorulites, Ostracodermi, Dipnoi, and Teleostomi (Crossopterygii and Chondrostean Actinopterygii). Pp. xliv., 567. 58 Woodcuts and 16 Plates. [With Alphabetical Index, and Systematic Index of Genera and Species.] 1891, 8vo. 1*l.* 1*s.*

Catalogue of the Fossil Fishes in the British Museum (Natural History)—*continued.*

Part III. Containing the Actinopterygian Teleostomi of the Orders Chondrostei (concluded), Protospondyli, Aetheospondyli, and Isospondyli (in part). Pp. xlii., 544. 45 Woodcuts and 18 Plates. [With Alphabetical Index, and Systematic Index of Genera and Species.] 1895, 8vo. 1*l.* 1*s.*

Part IV. Containing the Actinopterygian Teleostomi of the Suborders Isospondyli (in part), Ostariophysi, Apodes, Percesoces, Hemibranchii, Acanthopterygii, and Anacanthini. Pp. xxxix., 636. 22 Woodcuts and 19 Plates. [With Alphabetical Index, and Systematic Index of Genera and Species.] 1901, 8vo. 1*l.* 1*s.*

A descriptive Catalogue of the Tertiary Vertebrata of the Fayûm, Egypt. Based on the Collection of the Egyptian Government in the Geological Museum, Cairo, and on the Collection in the British Museum (Natural History), London. By C. W. Andrews, D.Sc. Pp. xxxvii., 324: 98 Text Figures and 26 Plates. [With Systematic and Alphabetical Indexes.] 1906, 4to. 1*l.* 15*s.*

Systematic List of the Edwards Collection of British Oligocene and Eocene Mollusca in the British Museum (Natural History), with references to the type-specimens from similar horizons contained in other collections belonging to the Geological Department of the Museum. By Richard Bullen Newton, F.G.S. Pp. xxviii., 365. [With table of Families and Genera, Bibliography, Correlation-table, Appendix, and Alphabetical Index.] 1891, 8vo. 6*s.*

Catalogue of Tertiary Mollusca in the Department of Geology, British Museum (Natural History). Part I. The Australasian Tertiary Mollusca. By George F. Harris, F.G.S., &c. Pp. xxvi., 407. 8 Plates. [With Table of Families, Genera, and Sub-Genera, and Index.] 1897, 8vo. 10*s.*

Catalogue of the Fossil Cephalopoda in the British Museum (Natural History) :—

Part I. Containing part of the Suborder Nautiloidea, consisting of the families Orthoceratidæ, Endoceratidæ, Actinoceratidæ, Gomphoceratidæ, Ascoceratidæ, Poterioceratidæ, Cyrtoceratidæ, and Supplement. By Arthur H. Foord, F.G.S. Pp. xxxi., 344. 51 Woodcuts. [With Systematic Index, and Alphabetical Index of Genera and Species, including Synonyms.] 1888, 8vo. 10*s.* 6*d.*

Catalogue of the Fossil Cephalopoda in the British Museum (Natural History)—*continued.*

Part II. Containing the remainder of the Suborder Nautiloidea, consisting of the families Lituitidæ, Trochoceratidæ, Nautilidæ, and Supplement. By Arthur H. Foord, F.G.S. Pp. xxviii., 407. 86 Woodcuts. [With Systematic Index, and Alphabetical Index of Genera and Species, including Synonyms.] 1891, 8vo. 15*s.*

Part III. Containing the Bactritidæ, and part of the Suborder Ammonoidea. By Arthur H. Foord, Ph.D., F.G.S., and George Charles Crick, A.R.S.M., F.G.S. Pp. xxxiii., 303. 146 Woodcuts. [With Systematic Index of Genera and Species, and Alphabetical Index.] 1897, 8vo. 12*s.* 6*d.*

List of the Types and Figured Specimens of Fossil Cephalopoda in the British Museum (Natural History). By G. C. Crick, F.G.S. Pp. 103. [With Index.] 1898, 8vo. 2*s.* 6*d.*

A Catalogue of British Fossil Crustacea, with their Synonyms and the Range in Time of each Genus and Order. By Henry Woodward, F.R.S. Pp. xii., 155. [With an Alphabetical Index.] 1877, 8vo. 5*s.*

Catalogue of the Fossil Bryozoa in the Department of Geology, British Museum (Natural History):—

The Jurassic Bryozoa. By J. W. Gregory, D.Sc., F.G.S., F.Z.S. Pp. [viii.,] 239 : 22 Woodcuts and 11 Plates. [With List of Species and Distribution, Bibliography, Index, and Explanation of Plates.] 1896, 8vo. 10*s.*

The Cretaceous Bryozoa. By J. W. Gregory, D.Sc., F.R.S., &c. :—

Vol. I. Pp. xiv., 457 : 64 Woodcuts and 17 Plates. [With Index and Explanation of Plates.] 1899, 8vo. 16*s.*

Vol. II. Pp. xlviii., 346. 75 Woodcuts and 9 Plates. [With List of Localities, Bibliography, Subject and Systematic Indexes, and Explanation of Plates.] 1909, 8vo. 13*s.*

Catalogue of the Blastoidea in the Geological Department of the British Museum (Natural History), with an account of the morphology and systematic position of the group, and a revision of the genera and species. By Robert Etheridge, jun., of the Department of Geology, British Museum (Natural History), and P. Herbert Carpenter, D.Sc., F.R.S.,

F.L.S. (of Eton College). Pp. xv., 322. 20 Plates. [With Preface by Dr. H. Woodward, Table of Contents, General Index, Explanations of the Plates, &c.] 1886, 4to. 1*l.* 5*s.*

The Genera and Species of Blastoidea, with a List of the Specimens in the British Museum (Natural History). By F. A. Bather, M.A., F.G.S., of the Geological Department. Pp. x., 70. 1 Woodcut. 1899, 8vo. 3*s.*

Catalogue of the Palæozoic Plants in the Department of Geology and Palæontology, British Museum (Natural History). By Robert Kidston, F.G.S. Pp. viii., 288. [With a list of works quoted, and an Index.] 1886, 8vo. 5*s.*

Catalogue of the Mesozoic Plants in the Department of Geology, British Museum (Natural History). By A. C. Seward, M.A., F.R.S., F.G.S., University Lecturer in Botany and Fellow of Emanuel College, Cambridge :—

Part I. The Wealden Flora. Part I. Thallophyta—Pteridophyta. Pp. xxxviii., 179. 17 Woodcuts and 11 Plates. [With Alphabetical Index, Explanations of the Plates, &c.] 1894, 8vo. 10*s.*

Part II. The Wealden Flora. Part II. Gymnospermæ. Pp. viii., 259. 9 Woodcuts and 20 Plates. [With Alphabetical Index, Explanations of the Plates, &c.] 1895, 8vo. 15*s.*

Part III. The Jurassic Flora. Part I. The Yorkshire Coast. Pp. xii., 341. 53 Woodcuts and 21 Plates. [With Alphabetical Index, Explanations of the Plates, &c.] 1900, 8vo. 1*l.*

Part IV. The Jurassic Flora. II.—Liassic and Oolitic Floras of England (excluding the Inferior Oolite Plants of the Yorkshire Coast). Pp. xv., 192. 20 Woodcuts and 13 Plates. [With Alphabetical Index, Explanations of the Plates, &c.] 1904, 8vo. 10*s.*

Catalogue of the Fossil Plants of the Glossopteris Flora in the Department of Geology, British Museum (Natural History). Being a Monograph of the Permo-carboniferous Flora of India and the Southern Hemisphere. By E. A. Newell Arber, M.A., F.L.S., F.G.S. Pp. lxxiv., 255 : 51 Text-Figures and 8 Plates. [With Bibliography and Alphabetical Index.] 1905, 8vo. 12*s.* 6*d.*

GUIDE-BOOKS, Etc.

General Guide to the British Museum (Natural History), Cromwell Road, London, S.W. Thirteenth Edition. With 58 text-figures, 2 plans, 2 views of the building, and an illustrated cover. Pp. x., 121. 1913, 8vo. 3*d.*

Guide to the Specimens illustrating the Races of Mankind (Anthropology), exhibited in the Department of Zoology, British Museum (Natural History). Second Edition. [By R. Lydekker, F.R.S.] Illustrated by 16 Figures. Pp. 35. 1912, 8vo. 4*d.*

Guide to the Galleries of Mammals (other than Ungulates) in the Department of Zoology of the British Museum (Natural History). Eighth Edition. Pp. 101. 52 Woodcuts and 4 plans. Index. 1906, 8vo. 6*d.*

Guide to the Specimens of Great Game Animals (Ungulata) exhibited in the Department of Zoology, British Museum (Natural History). Second Edition. [By R. Lydekker, F.R.S.] Pp. 95. 53 Text and other figures. With list of Horns, Antlers and Tusks, and Index. 1913, 8vo. 1*s.*

Guide to the Elephants (Recent and Fossil) exhibited in the Department of Geology and Palæontology in the British Museum (Natural History). [By Dr. C. W. Andrews, F.R.S.] Illustrated by 31 text-figures. Pp. 46. 1908, 8vo. 6*d.*

Guide to the Specimens of the Horse Family (Equidæ) exhibited in the Department of Zoology, British Museum (Natural History). [By R. Lydekker, F.R.S.] Pp. 42. 26 Figures. 1907, 8vo. 1*s.*

Guide to the Domesticated Animals (other than Horses) exhibited in the Central and North Halls of the British Museum (Natural History). Second Edition. [By R. Lydekker, F.R.S.] Illustrated by 25 Figures. Pp. 56. [With table of Contents, List of Illustrations, and Index.] 1912, 8vo. 6*d.*

Guide to the Whales, Porpoises, and Dolphins (order Cetacea) exhibited in the Department of Zoology, British Museum (Natural History). [By R. Lydekker, F.R.S.] Illustrated by 33 Figures. Pp. 47. [With Index.] 1909, 8vo. 4*d.*

Guide to the Gallery of Birds in the Department of Zoology, British Museum (Natural History). [By W. R. Ogilvie Grant.] Second Edition. Pp. iv., 228. 25 Plates, and 7 Illustrations in text. [With Index.] 1910, 4to. 2*s.* 6*d*

Guide to the Gallery of Birds in the Department of Zoology British Museum (Natural History). [By W. R. Ogilvie Grant.] :—

Part I. General Series. Pp. 149. [With Index.] 1905. 4to. 6*d.*

Part II. Nesting Series of British Birds. Second Edition. Pp. 62. 4 Plates. [Index.] 1909, 4to. 4*d.*

Guide to the Gallery of Reptilia and Amphibia in the Department of Zoology of the British Museum (Natural History). [By R. Lydekker, F.R.S.] Illustrated by 76 text and other Figures. Second Edition. Pp. iv., 85. [With Table of Contents and Index.] 1913, 8vo. 1*s.*

Guide to the Gallery of Fishes in the Department of Zoology of the British Museum (Natural History). [By Dr. W. G. Ridewood.] Illustrated by 96 Figures. Pp. v., 209. [With Preface by Sir E. Ray Lankester, Table of Classification, and Index.] 1908, 8vo. 1*s.*

Guide to the British Vertebrates Exhibited in the Department of Zoology, British Museum (Natural History). [By W. P. Pycraft.] Pp. iv., 122. 26 Text-Figures, 1 Plan. [With Index.] 1910, 8vo. 1*s.*

Guide to the exhibited series of Insects in the Department of Zoology, British Museum (Natural History). By C. O. Waterhouse. Second Edition. Pp. 65 : 62 text- and full-page Illustrations. [With Table of Contents and Index.] 1909, 8vo. 1*s.*

Guide to the Crustacea, Arachnida, Onychophora and Myriopoda exhibited in the Department of Zoology, British Museum (Natural History). (By W. T. Calman, D.Sc., A. S. Hirst, and F. J. Bell.) Pp. 133 : 90 Text-Figures. [With Table of Contents and Index.] 1910, 8vo. 1*s.*

Guide to the Shell and Starfish Galleries (Mollusca, Polyzoa, Brachiopoda, Tunicata, Echinoderma, and Worms), Department of Zoology, British Museum (Natural History). Fifth Edition. Pp. iv., 133. 125 Woodcuts, Plan, and Indexes. 1908, 8vo. 6*d.*

Guide to the Coral Gallery (Protozoa, Porifera or Sponges, Hydrozoa, and Anthozoa) in the Department of Zoology, British Museum (Natural History). Second Edition. Pp. [iv., 8] 73. 90 Illustrations, Plan, and Index. 1907, 8vo. 1*s.*

A Guide to the Fossil Mammals and Birds in the Department of Geology and Palæontology in the British Museum (Natural History). Ninth Edition. [By A. S. Woodward, LL.D., F.R.S.] Pp. xvi., 100. 6 Plates, 88 Text-Figures. [With List of Illustrations, Table of Stratified Rocks, and Index.] 1909, 8vo. 6*d.*

A Guide to the Fossil Reptiles, Amphibians, and Fishes in the Department of Geology and Palæontology in the British Museum (Natural History). Ninth Edition. [By A. S. Woodward, LL.D., F.R.S.] Pp. xviii., 110. 8 Plates and 116 Text-Figures. [With Table of Contents, Lists of Illustrations, Geological Time-Scale, and Index.] 1910, 8vo. 9*d.*

A Guide to the Fossil Invertebrate Animals in the Department of Geology and Palæontology in the British Museum (Natural History). [By F. A. Bather, D.Sc., F.R.S.] Second Edition. Pp. x., 183. 7 Plates and 96 Text-Figures. [With List of Illustrations, Geological Time-scale, and Index.] 1911, 8vo. 1*s.*

A Guide to the Mineral Gallery of the British Museum (Natural History). Eleventh Edition. Pp. 32. Plan. 1911, 8vo. 1*d.*

The Student's Index to the Collection of Minerals, British Museum (Natural History). Twenty-fourth Edition. Pp. 36. [With a Plan of the Mineral Gallery.] 1911, 8vo. 2*d.*

An Introduction to the Study of Minerals, with a Guide to the Mineral Gallery of the British Museum (Natural History). By L. Fletcher, M.A., F.R.S. Thirteenth Edition. Pp. 123. 41 Woodcuts. [With Plan of the Mineral Gallery and Index.] 1910, 8vo. 6*d.*

An Introduction to the Study of Rocks and Guide to the Museum Collection. Fourth Edition. By L. Fletcher, M.A., F.R.S. Pp. 155. [With Plan of the Mineral Gallery, Table of Contents, and Index.] 1909, 8vo. 1*s.*

An Introduction to the Study of Meteorites, with a List of the Meteorites represented in the Collection. By L. Fletcher, M.A., F.R.S., &c. Tenth Edition. Pp. 120. [With a Plan of the Mineral Gallery, and an Index to the Meteorites represented in the Collection.] 1908, 8vo. 6*d.*

List of British Seed-plants and Ferns exhibited in the Department of Botany, British Museum (Natural History). [By A. B. Rendle, D.Sc., F.R.S., and J. Britten, F.L.S.] With table of Sequence of Orders, and Index of Genera. Pp. 44. 1907, 8vo. 4*d.*

Guide to Sowerby's Models of British Fungi in the Department of Botany, British Museum (Natural History). Second Edition, revised. By Worthington G. Smith, F.L.S. Pp. 85. 91 Woodcuts. [With Table of Diagnostic Characters, Glossary, and Index.] 1908, 8vo. 4*d.*

*Guide to Mr. Worthington Smith's Drawings of Field and Cultivated Mushrooms, and Poisonous or Worthless Fungi, often mistaken for Mushrooms, exhibited in the Department of Botany, British Museum (Natural History). Pp. 24: 2 Plates, containing 28 coloured figures; 4 text-Figures. 1910, 8vo., 1*s.*

Guide to the British Mycetozoa exhibited in the Department of Botany, British Museum (Natural History). [By Arthur Lister, F.R.S.] Third Edition, revised. Pp. 49. 46 Woodcuts. Index. 1909, 8vo. 3*d.*

Special Guides.

No. 2.—Books and Portraits illustrating the History of Plant Classification exhibited in the Department of Botany. Second Edition. [By A. B. Rendle, M.A., D.Sc., F.R.S.] Pp. 19. 4 Plates. 1909, 8vo. 4*d.*

No. 4.—Memorials of Charles Darwin: a Collection of Manuscripts, Portraits, Medals, Books, and Natural History Specimens to commemorate the Centenary of his Birth and the Fiftieth Anniversary of the Publication of "The Origin of Species." (Second Edition.) [By W. G. Ridewood, D.Sc.] Pp. vi., 50. 2 Plates. 1910, 8vo. 6*d.*

No. 5.—Guide to the Exhibition of Animals, Plants, and Minerals mentioned in the Bible. Second Edition. Pp. vii., 78. 7 Text-figures. [With Index.] 1911, 8vo. 6*d.*

No. 6.—Guide to the Exhibition of Specimens illustrating the modification of the Structure of Animals in relation to Flight. Pp. viii., 80. 1 Plate, 44 Text-figures. [With List of Illustrations and Index.] 1913, 8vo. 6*d.*

Instructions for Collectors.

Handbook of Instructions for Collectors, issued by the British Museum (Natural History). With Illustrations. Third Edition. Pp. 144. Index. 1906, 8vo. 1*s.* 6*d.*

Instructions for Collectors:—

No. 1.—Mammals. Fourth Edition. Pp. 8. Text illust. 1912, 8vo. 3*d.*

No. 2.—Birds and their Eggs. Fifth Edition. Pp. 13. 6 Text-figures. 1912, 8vo. 3*d.*

---

* The plates may be had separately in one sheet mounted on linen and varnished. Price 1*s.*, or 1*s.* 2*d.* post free.

Instructions for Collectors—*continued.*

No. 3.—Reptiles, Batrachians, and Fishes. [Third Edition.] Pp. 12. 1903, 8vo. 4*d.*

No. 4.—Insects. Fifth Edition. Pp. 11. Text illust. 1911, 8vo. 3*d.*

No. 5.—Diptera (Two-winged Flies). Third Edition. Pp. 16. Text illust. 1908, 8vo. 3*d.*

No. 6.—Mosquitoes (Culicidæ). [Third Edition.] Pp. 8. 1 Plate, 1 figure in text. 1904, 8vo. 3*d.*

No. 7.—Blood-sucking Flies, Ticks, &c. By E. E. Austen. Third Edition. Pp. 24 : 13 figures in text. 1907, 8vo. 3*d.*

No. 8.—Spiders, Centipedes, &c. Second Edition. Pp. 4. 1906, 8vo. 3*d.*

No. 9.—Soft-bodied and other Invertebrate Animals; Shells of Molluscs. Third Edition. Pp. 18. 1909, 8vo. 3*d.*

No. 10.—Plants. Fourth Edition. Pp. 10 : 3 figures in text. 1909, 8vo. 3*d.*

No. 11.—Fossils and Minerals. Fourth Edition. Pp. 8. 1913, 8vo. 3*d.*

Economic Series.

No. 1.—The House-Fly as a Danger to Health. Its Life-history, and how to deal with it. By Ernest E. Austen. Second Edition. Pp. 12 : 2 plates (containing 4 figures), and 3 figures in text. 1913, 8vo. 1*d.*

British Museum (Natural History),
Cromwell Road,
London, S.W.
November, 1913.

Harvard MCZ Library
3 2044 066 326 745

Date Due

29 Jul 49

AUG 3 1 1951

Please scan under barcode:

39088008219719